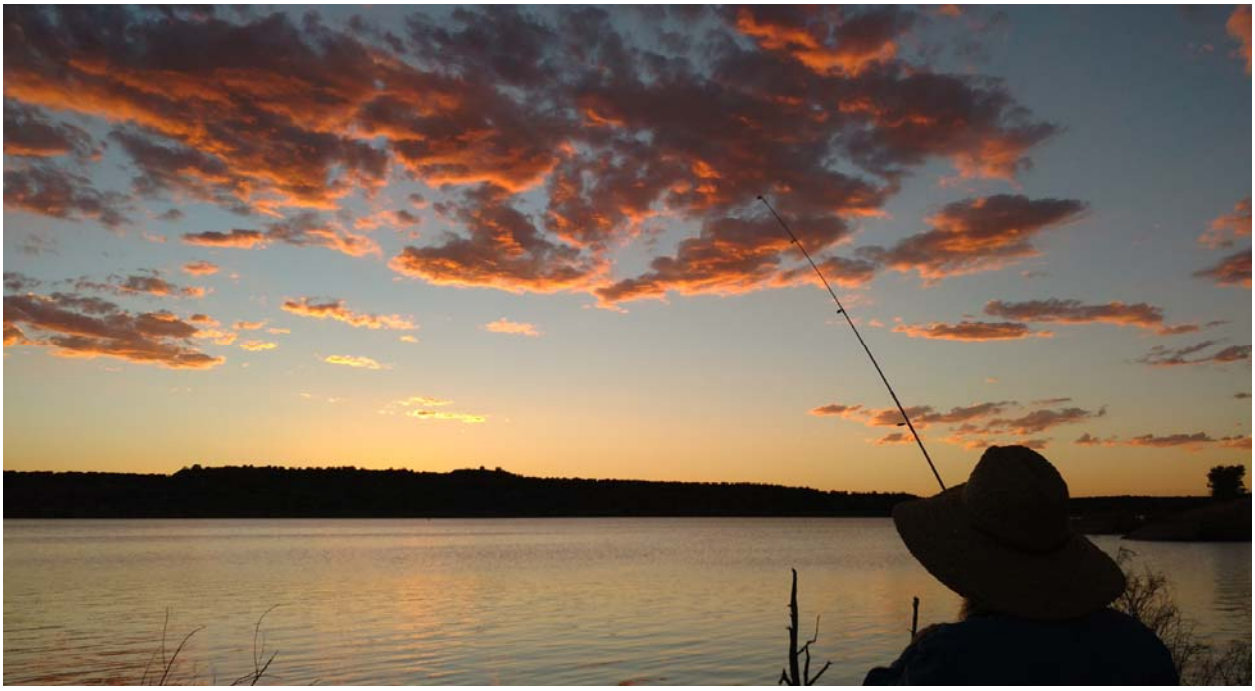
Sampling Summary

CANADIAN RIVER AND DRY CIMARRON RIVER WATERSHEDS

Water Quality Survey



Survey Conducted
November 2014 – November 2016

Summary Draft
December 2016

Monitoring, Assessment and Standards Section
Surface Water Quality Bureau
New Mexico Environment Department
P.O. Box 2610
Santa Fe, NM 87502

https://www.env.nm.gov/surface-water-quality/

Abbreviations

AP	Assessment Protocol
AU	Assessment Unit
CWA	Clean Water Act
FSP	Field Sampling Plan
IR	State of New Mexico Clean Water Act §303(d)/305(b) Integrated Report
m	meter
MASS	Monitoring, Assessment and Standards Section
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint Source
PSRS	Point Source Regulation Section
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
SLD	Scientific Laboratory Division
SOP	Standard Operating Procedures
SVOC	Semi-Volatile Organic Compounds
SWQB	Surface Water Quality Bureau
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
UAA	Use Attainability Analysis
USACOE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOC	Volatile Organic Compounds
WQCC	Water Quality Control Commission
WPS	Watershed Protection Section
WQS	Water Quality Standard
WWTP	Wastewater Treatment Plant

Introduction

The New Mexico Environment Department (NMED), Surface Water Quality Bureau (SWQB) conducted a water quality survey of the Canadian and Dry Cimarron Rivers from the Colorado border to the Texas and Oklahoma state lines from November 2014 to November 2016. SWQB released a draft Field Sampling Plan (FSP) for the Canadian and Dry Cimarron River project for public comment in February 2014. The FSP was published in March 2015 and then revised in March 2016. The FSP is available on the SWQB website at https://www.env.nm.gov/swqb/MAS/#FSP. This summary report is a companion document to the Canadian River and Dry Cimarron River Watershed 2015-2016 FSP (NMED/SWQB 2016a), and details completion, deviations, and a basic review of planned activities.

SWQB conducts concentrated watershed-based water quality surveys to fulfill work plan requirements of the Clean Water Act (CWA) Section 106 grant. This grant provides federal funding to ensure that high quality, defensible data are collected and available to make informed resource management decisions. Data and conclusions are publicly available to interested parties by making a formal request to the Program Manager of SWQB's Monitoring, Assessment, and Standards Section. The purpose of water quality sampling is to assess the quality of surface waters in the state, determine where water quality standards are not being met (i.e. where water quality is impaired), and to inform development of Total Maximum Daily Loads (TMDLs) for impaired waters, which lay the foundation for restoring these waters.

Personnel Roles and Responsibilities

The SWQB Monitoring, Assessment and Standards Section primarily conducted this survey, with assistance from other SWQB sections. Individual roles and responsibilities are described in **Table 1**.

Table 1. Personnel Roles and Responsibilities

Team Member	Position/Role	Responsibilities
Kris Barrios Monitoring Team Coordinator kristopher.barrios@state.nm.us (505) 827-2621 Charles Dentino Field Team Supervisor Lakes Coordinator charles.dentino1@state.nm.us (505) 827-0101 Vacant Lower Canadian River Basin Adam Ullom Lower Canadian River Basin Adam.ullom@state.nm.us (505) 827-2928 Seva Joseph Upper Canadian/Dry Cimarron River Basins seva.joseph@state.nm.us (505) 827-0753 Gary Schiffmiller Upper Canadian/Dry Cimarron River Basins gary.schiffmiller@state.nm.us (505) 827-2470	MASS Project Coordinators	• Coordinate survey planning efforts (integrate the documentation of various team members' information into the field sampling plan and planning spreadsheet); • Coordinate and participate in the collection of chemical, biological, and habitat data including sonde and thermograph data collection efforts; • Manage data for study (forms, data entry, data verification and analysis); • Prepare final survey report integrating information from all team members.
Bryan Dail bryan.dail@state.nm.us (505) 476-3799	Standards Liaison	• Provide information and data needs pertaining to water quality standards development and refinement located within the study area.
Jennifer Foote Jennifer.Foote@state.nm.us (505) 827-0596 Barbara Cooney barbara.cooney@state.nm.us (505) 827-0212	Point Source Regulation Section (PSRS) Liaisons	• Provide information and data needs pertaining to point source discharges located within the study area; • Assist with development of final survey report, as needed.
Greg Kaufman greg.kaufman@state.nm.us (505) 476-4300	Watershed Protection Section (WPS) Liaisons	• Provide information and data needs pertaining to nonpoint sources of pollution and BMPs located within the study area. • Assist with development of final survey report, as needed.

Wayne Urbonas wayne.urbonas@state.nm.us (505) 827-2820	TMDL Liaison	• Provide information and data needs pertaining to TMDL development to be conducted in the study area; • Assist with development of final survey report, as needed; and • Develop TMDLs as needed.

Objectives

Because the data generated must serve the needs of all sections within the SWQB, this survey had several objectives, as outlined in **Table 2**.

Table 2. Survey Objectives

	Intended use of data	**Question to be answered**	**Products/ Outcomes**	**Decision Criteria**
Primary Objective	Assess designated use attainment for the New Mexico Clean Water Act §303(d)/305(b) *Integrated Report* and provide information to the public on the condition of surface waters in New Mexico	Are sampled waterbodies meeting water quality standards (WQS) criteria?	Integrated Report and Survey Report	WQS as interpreted by the SWQB Assessment Protocols (APs)
Secondary Objectives	Develop load and waste load allocations for TMDLs	What is the maximum pollutant load a waterbody can receive and still meet the WQS?	TMDL loading calculations and National Pollutant Discharge Elimination System (NPDES) permit limits	WQS as interpreted by the APs
	Evaluate restoration and mitigation measures implemented to control Nonpoint Source (NPS) pollution	Have watershed restoration activities and mitigation measures improved water quality?	Project Summary Reports, NPS Annual Report, Integrated Report *(De-Listing)*	WQS as interpreted by the APs and comparison of water quality data over time (trend analysis)
	Develop or refine surface WQS	Are the existing or designated uses appropriate for the waterbody?	Use Attainability Analyses (UAA), Amendments to WQS	Are data sufficient to support a petition to the Water Quality Control Commission (WQCC) to revise WQS?

Schedule

This survey consisted of many components, beginning with planning and ending with the generation of this summary report and update to the State of New Mexico Clean Water Act (CWA) Section 303(d)/305(b) Integrated Report (IR). As part of the survey planning process, public meetings were held in March, 2015 in Tucumcari and Raton, NM to answer questions and solicit input for the survey. Completion of this water quality survey, excluding the IR update and TMDL stages, took two years (**Table 3**). Total Maximum Daily Loads (TMDLs), if necessary, will be completed based on SWQB's §303(d) prioritization framework and long-term vision for water quality in New Mexico.

Table 3. Project Schedule

Activity	Winter 2014-2015	Spring 2015	Summer 2015	Fall 2015	Winter 2015-2016	Spring 2016	Summer 2016	Fall 2016	Winter 2016-2017	Spring 2017	Summer 2017
Survey Planning, Site Reconnaissance, and Public Input Period	==========▶										
Data Collection & Submittal of WQ Samples to SLD		==========▶				==========▶					
Data Verification & Validation Procedures		==========▶				==========▶			==========▶		
Publication of Survey Report									==========▶		

Sampling plan

The survey included collection of chemical water quality samples between approximately March and November of 2015 and 2016, biological sampling within the index period (August 15 - November 15, 2015-2016), and physical habitat measurements during periods of base flow. Data were collected according to SWQB standard operating procedures (SOPs; NMED/SWQB 2013-2016) and the field sampling plan (FSP) developed for this survey (NMED/SWQB 2016a). The monitoring stations and station rationales are presented in **Figures 2** through **5** and **Table 4**.

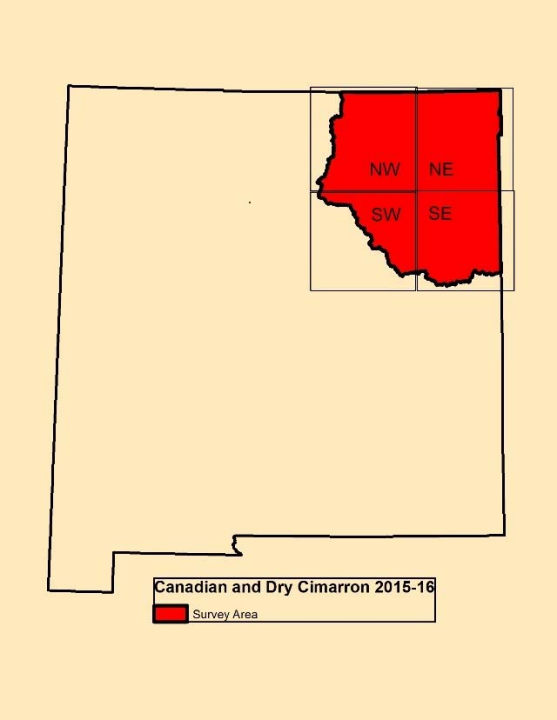


Figure 1. Canadian/Dry Cimarron sampling area.

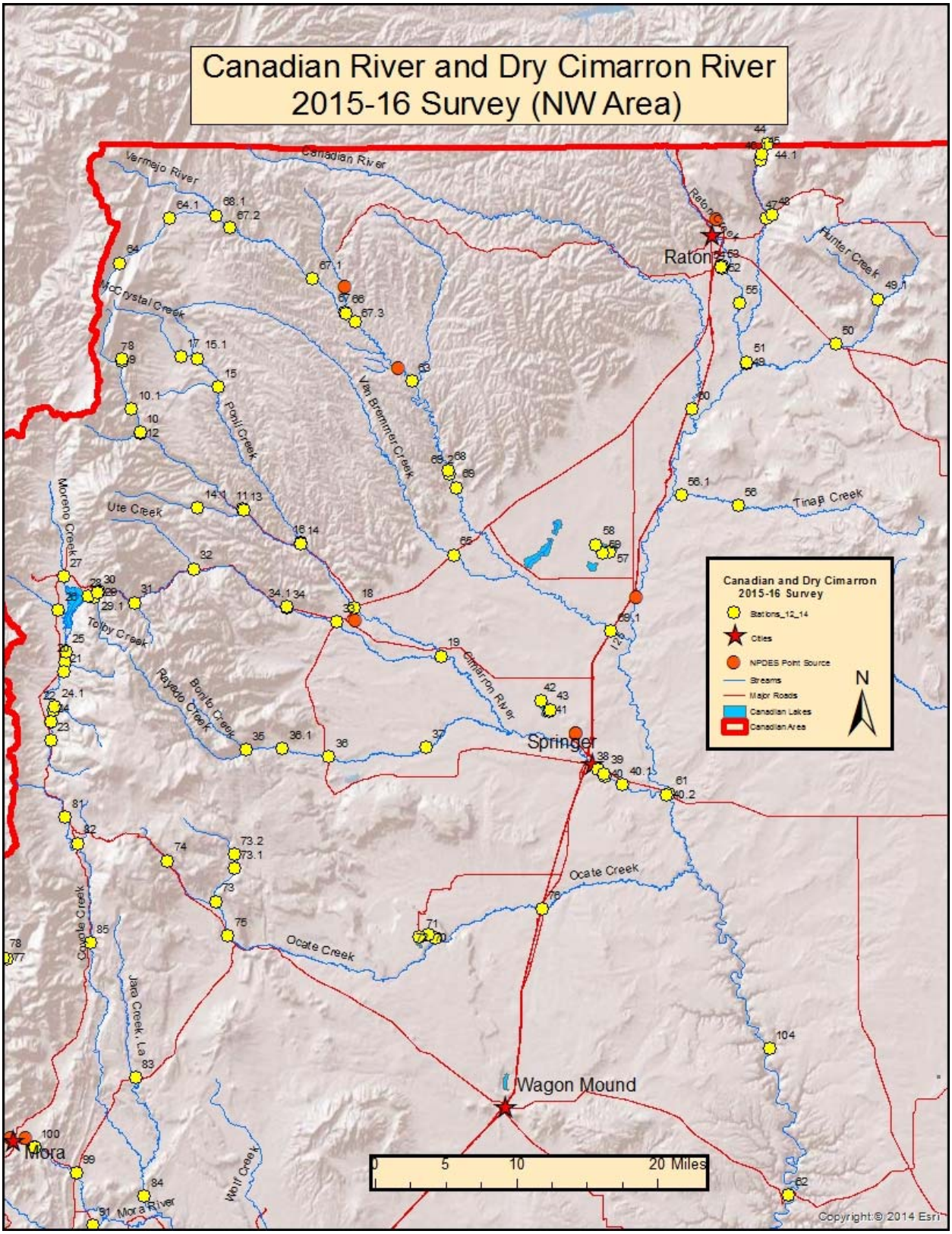


Figure 2. Location of the northwestern portion of the Canadian and Dry Cimarron River survey area and sample locations in New Mexico. Station numbers relate to the following tables.

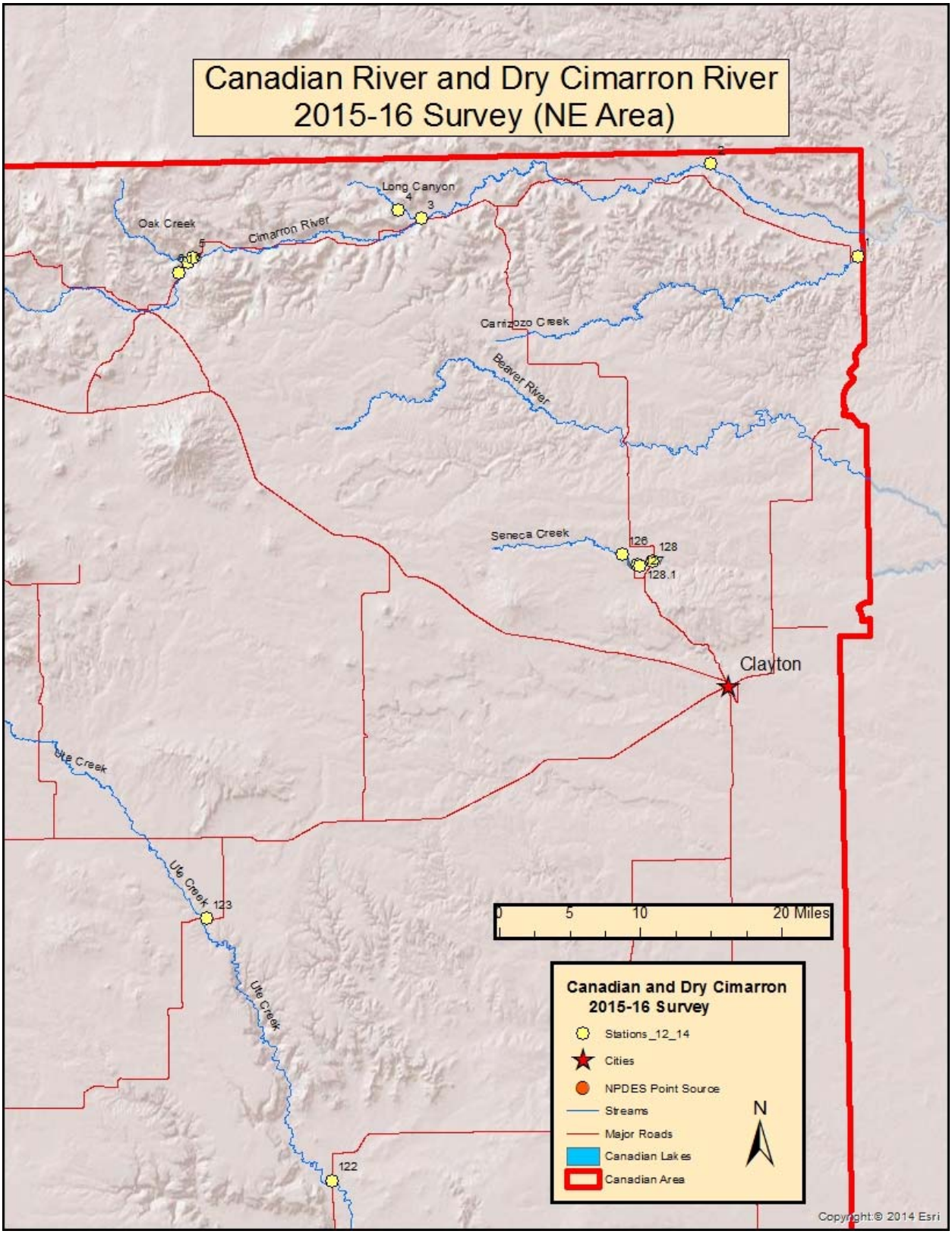


Figure 3. Location of the northeastern portion of the Canadian and Dry Cimarron River survey area and sample locations in New Mexico. Station numbers relate to the following tables.

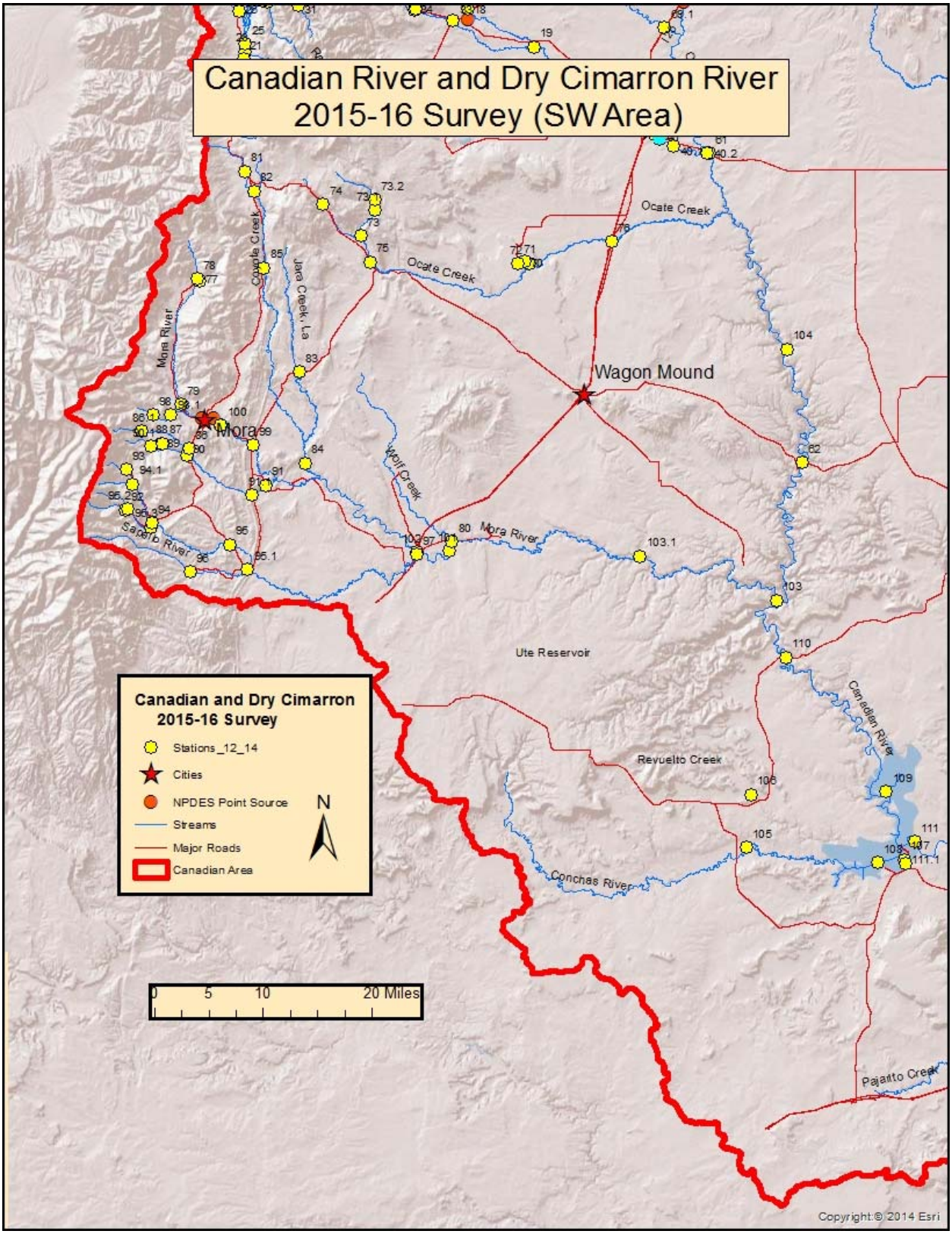


Figure 4. Location of the southwestern portion of the Canadian and Dry Cimarron River survey area and sample locations in New Mexico. Station numbers relate to the following tables.

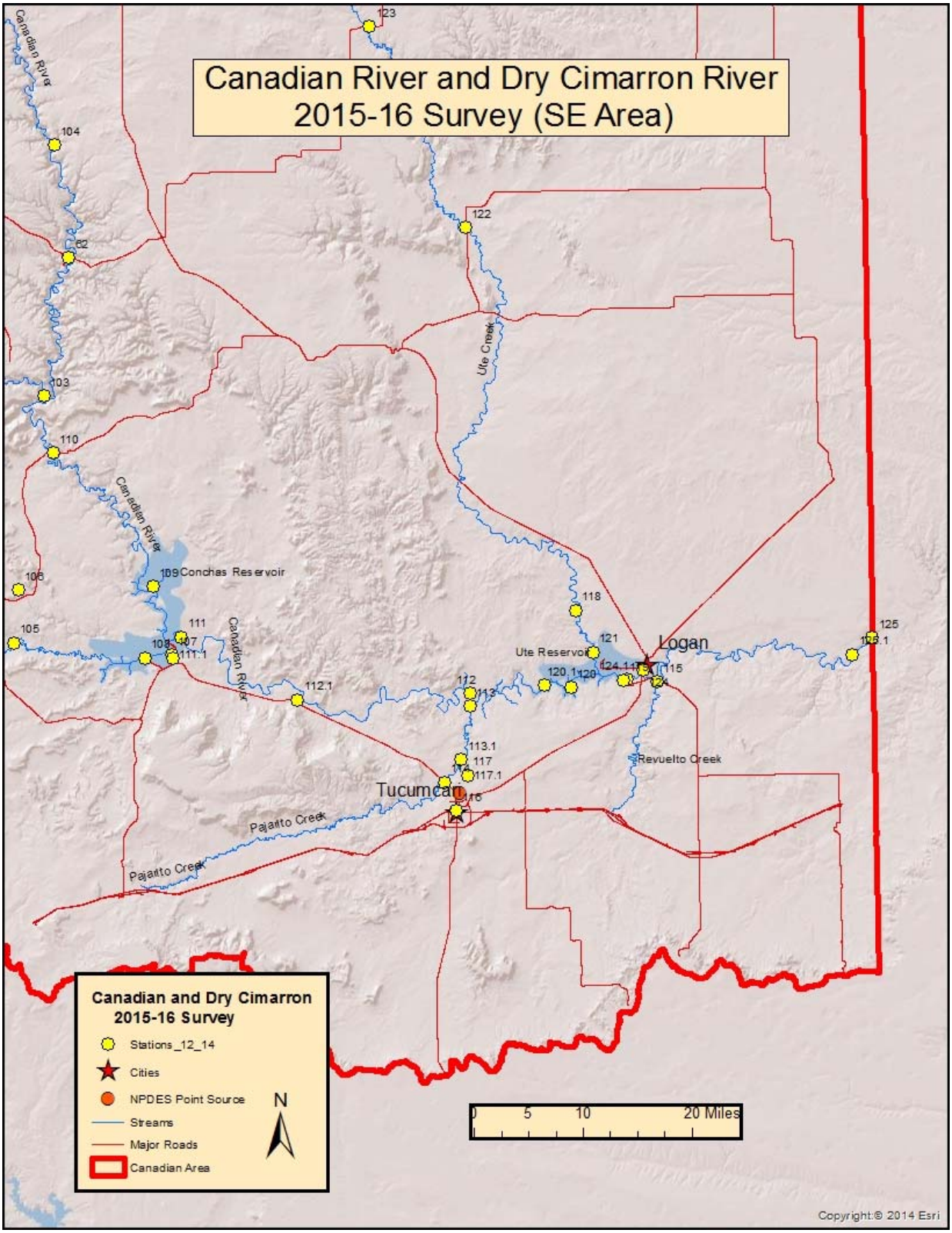


Figure 5. Location of the southwestern portion of the Canadian and Dry Cimarron River survey area and sample locations in New Mexico. Station numbers relate to the following tables.

Table 4. SWQB Water Quality Stations in Canadian/Dry Cimarron Survey.

Map #	Station Name	Station ID	Assessment Unit	Rationale/Comments	Current Impairments*
1	Carrizozo Creek near NM 406 (DCR 12)	02Carriz002.7	Carrizozo Creek (OK bnd to headwaters)	Only station in AU. Might be ephemeral. Removed sampling. Will continue to document flow conditions.	
2	Dry Cimarron River at Wedding Cake Butte	02DryCim024.6	Dry Cimarron R (Perennial reaches OK bnd to Long Canyon)	Only station in AU, impairments.	Oxygen, Dissolved|Sulfates|Temperature, water|Total Dissolved Solids
3	Dry Cimarron River above Long Canyon (DCR 05)	02DryCim074.5	Dry Cimarron River (Long Canyon to Oak Ck)	Only station in AU, impairments.	Escherichia coli|Total Dissolved Solids
4	Long Canyon above NM 456 (DCR 06)	02LongCa004.1	Long Canyon (Perennial reaches abv Dry Cimarron)	Only station in AU, impairments.	Escherichia coli|Selenium
5	Oak Creek above Dry Cimarron River (DCR 03)	02OakCre000.1	Oak Creek (Dry Cimarron to headwaters)	Only station in AU, impairments. Might be ephemeral. Removed sampling. Will continue to document flow conditions.	Escherichia coli|Nutrient/Eutrophication Biological Indicators
6	Dry Cimarron River above Oak Creek	02DryCim113.1	Dry Cimarron River (Oak Creek to headwaters)	See map # 6.1	
6.1	Dry Cimarron River below Folsom Falls - 02DryCim114.9	02DryCim114.9	Dry Cimarron River (Oak Creek to headwaters)	Only station in AU, impairments. Station changed due to better access. This station replaces map # 6. No samples collected at 6.	
7	North Shuree Pond	05NShureeDeep	Shuree Pond (North)	Recreation Lake.	
8	Shuree Creek above North Shuree Pond	05ShurCr000.8	Shuree Pond (North)	Lake Inlet.	
9	Shuree Creek below North Shuree Pond	05ShurCr000.6	Shuree Pond (North)	Lake Outlet.	
10	Middle Ponil Creek above Greenwood Creek	05MPonil016.2	Middle Ponil Creek (Greenwood Creek to headwaters)	Moved station. See map # 10.1.	
10.1	Middle Ponil Creek @ FR 1910/1914 - 05MPonil019.3	05MPonil019.3	Middle Ponil Creek (Greenwood Creek to headwaters)	Only station in AU, impairments. Replaces map # 10. Better access	Nutrient/Eutrophication Biological Indicators

Map #	Station Name	Station ID	Assessment Unit	Rationale/Comments	Current Impairments*
11	Middle Ponil Creek above South Ponil Creek	05MPonil000.1	Middle Ponil Creek (South Ponil to Greenwood Creek)	Only station in AU, impairments.	Benthic-Macroinvertebrate Bioassessments|Temperature, water
12	Greenwood Creek above Middle Ponil Creek	05Greenw000.1	Greenwood Canyon (Middle Ponil Creek to headwaters)	Only station in AU, impairments.	Aluminum
13	South Ponil above Middle Ponil Creek	05SPonil008.5	South Ponil Creek (Middle Ponil Creek to headwaters)	Only station in AU, impairments.	
14	South Ponil above North Ponil Creek	05SPonil000.1	South Ponil Creek (Ponil Creek to Middle Ponil Creek)	Only station in AU, impairments.	Temperature, water
14.1	South Ponil Creek downstream of Pueblano Camp	05SPonil015.8	South Ponil Creek (Middle Ponil Creek to headwaters)	Thermograph	
15	North Ponil Creek above Seally Creek	05NPonil023.2	North Ponil Creek (Seally Canyon to headwaters)	Moved station to map # 15.1	Aluminum|Gross Alpha|Radium 226|Radium 228|Temperature, water|Turbidity
15.1	North Ponil below FR 1950 - 05NPonil027.5	05NPonil027.5	North Ponil Creek (Seally Canyon to headwaters)	Only station in AU, impairments.	Aluminum|Gross Alpha|Radium 226|Radium 228|Temperature, water|Turbidity
16	North Ponil Creek above South Ponil Creek	05NPonil000.1	North Ponil Creek (South Ponil Creek to Seally Canyon)	Only station in AU, impairments.	Escherichia coli|Nutrient/Eutrophication Biological Indicators|Temperature, water|Turbidity
17	McCrystal Creek at USFS Campgound	05McCrys002.0	McCrystal Creek (North Ponil to headwaters)	Only station in AU, impairments.	Temperature, water|Turbidity
18	Ponil Creek above NM 64	05PonilC014.9	Ponil Creek (US 64 to confl of North & South Ponil)	Only station in AU, impairments.	Escherichia coli|Nutrient/Eutrophication Biological Indicators|Temperature, water|Turbidity
19	Ponil Creek above Cimarron River	05PonilC000.1	Ponil Creek (Cimarron River to US 64)	Only station in AU, impairments.	Benthic-Macroinvertebrate Bioassessments|Escherichia coli
20	American Creek above Cieneguilla Creek	05Americ000.5	American Creek (Cieneguilla Creek to headwaters)	Only station in AU.	
21	Saladon Creek above Cieneguilla Creek	05Salado000.5	Saladon Creek (Cieneguilla Creek to HW)	Only station in AU, impairments.	

Map #	Station Name	Station ID	Assessment Unit	Rationale/Comments	Current Impairments*
22	West Agua Fria Creek above Cieneguilla	05WestAg000.6	West Agua Fria Creek (Cieneguilla Creek to headwaters)	New Station.	
23	Cieneguilla Creek at Angel Fire Road	05Cieneg019.3	Cieneguilla Creek (Eagle Nest Lake to headwaters)	Above Angel Fire WWTP.	Escherichia coli|Nutrient/Eutrophication Biological Indicators|Sedimentation/Siltation|Temperature, water|Turbidity
24	Angel Fire WWTP	NM0030503	Cieneguilla Creek (Eagle Nest Lake to headwaters)	NPDES Sampling.	Escherichia coli|Nutrient/Eutrophication Biological Indicators|Sedimentation/Siltation|Temperature, water|Turbidity
24.1	Angel Fire WWTP post uv	NM00030503A	Cieneguilla Creek (Eagle Nest Lake to headwaters)	Added been unable coolect herem pipe.	Escherichia coli|Nutrient/Eutrophication Biological Indicators|Sedimentation/Siltation|Temperature, water|Turbidity
25	Cieneguilla Creek above Eagle Nest Lake	05Cieneg006.3	Cieneguilla Creek (Eagle Nest Lake to headwaters)	Below Angel Fire WWTP, Impairments	Escherichia coli|Nutrient/Eutrophication Biological Indicators|Sedimentation/Siltation|Temperature, water|Turbidity
26	Sixmile Creek above US 64	05Sixmil001.4	Sixmile Creek (Eagle Nest Lake to headwaters)	Only station in AU, impairments.	Escherichia coli|Nutrient/Eutrophication Biological Indicators|Temperature, water|Turbidity
27	Moreno Creek on NM 64	05Moreno003.7	Moreno Creek (Eagle Nest Lake to headwaters)	Only station in AU, impairments.	Nutrient/Eutrophication Biological Indicators|Temperature, water
28	Eagle Nest Lake	05EagleNestDP	Eagle Nest Lake	Recreation Lake.	Arsenic|Oxygen, Dissolved
29	Cimarron River below Eagle Nest Dam	05Cimarr077.2	Cimarron River (Turkey Creek to Eagle Nest Lake)	Station moved to map # 29.1	Arsenic|Nutrient/Eutrophication Biological Indicators
29.1	Cimarron River at Eagle Nest Outlet - 05Cimarr078.1	05Cimarr078.1	Cimarron River (Turkey Creek to Eagle Nest Lake)	Lake Outlet.	Arsenic|Nutrient/Eutrophication Biological Indicators
30	Tolby Creek above Cimarron River	05TolbyC000.1	Tolby Creek (Cimarron River to headwaters)	New Station.	
31	Clear Creek above Cimarron River	05ClearC000.1	Clear Creek (Cimarron River to headwaters)	New Station.	
32	Ute Creek above US 64	05UteCre000.6	Ute Creek (Perennial prt Cimarron	Only station in AU, impairments.	Escherichia coli

Map #	Station Name	Station ID	Assessment Unit	Rationale/Comments	Current Impairments*
			River to headwaters)		
33	Cimarron River @ NM 21 in Cimarron	05Cimarr044.2	Cimarron River (Cimarron village to Turkey Creek)	Only station in AU, impairments.	Arsenic|Temperature, water
34	Cimarron River above Turkey Creek	05Cimarr051.4	Cimarron River (Turkey Creek to Eagle Nest Dam)	Lowest station in AU.	Arsenic|Nutrient/Eutrophication Biological Indicators
34.1	Turkey Creek above Cimarron River	05Turkey000.1	Turkey Creek (Cimarron River to headwaters)	Added to document flow. No samples scheduled.	
35	Bonito Creek above Rayado Creek	05Bonito000.1	Bonito Creek (Rayado Creek to headwaters)	Dry/intermittent	
36	Rayado Creek at NM 21	05Rayado033.8	Rayado Creek (Miami Lake Diversion to headwaters)	Only station in AU, impairments.	Escherichia coli|Temperature, water
36.1	Rayado Creek near Zastrow Camp	05Rayado041.0	Rayado Creek (Miami Lake Diversion to headwaters)	Thermograph station	Escherichia coli|Temperature, water
37	Rayado Creek at Miami Lane	05Rayado018.5	Rayado Creek (Cimarron River to Miami Lake Diversion)	Only station in AU, impairments.	Nutrient/Eutrophication Biological Indicators|Sedimentation/Siltation
38	Cimarron River above Springer WWTP	05Cimarr011.8	Cimarron River (Canadian River to Cimarron Village)	Above Springer WWTP	Nutrient/Eutrophication Biological Indicators
39	Springer WWTP	NM0030295	Cimarron River (Canadian River to Cimarron Village)	No discharge. No samples taken	
40	Cimarron River below Springer WWTP	05Cimarr010.4	Cimarron River (Canadian River to Cimarron Village)	Below Springer WWTP lagoons	Nutrient/Eutrophication Biological Indicators
40.1	Cimarron River below Springer WWTP Ponds - 05Cimarr007.6	05Cimarr007.6	Cimarron River (Canadian River to Cimarron Village)	New station to get below WWTP ponds.	Nutrient/Eutrophication Biological Indicators
40.2	Cimarron abv Canadian River - 05Cimarr000.5	05Cimarr000.5	Cimarron River (Canadian	Lowest station in AU	Nutrient/Eutrophication Biological Indicators

Map #	Station Name	Station ID	Assessment Unit	Rationale/Comments	Current Impairments*
			River to Cimarron Village)		
41	Springer Lake	05SpringerLDp	Springer Lake	Recreation Lake.	Mercury in Fish Tissue
42	Springer Lake inlet	05SpringerInlet	Springer Lake	Lake Inlet. Wetland. Could not find good sampling point.	Mercury in Fish Tissue
43	Springer Lake outlet	05SpringerOutlet	Springer Lake	Lake Outlet.	Mercury in Fish Tissue
44	Chicorica Creek above Lake Maloya	04LMaloChicIn	(Lake Maloya to CO border)	Lake Inlet.	Temperature, water
44.1	Lake Maloya Inlet at Schwachheim Creek	04LMaloSchwIn	Lake Maloya	Lake Inlet.	Temperature, water
45	Lake Maloya	04LMaloyaDeep	Lake Maloya	Recreation Lake.	Temperature, water
46.1	Chicorica Creek below Maloya	04Chicor037.3	Chicorica Creek (East Fork Chicorica to headwaters)	Lake Outlet.	
47	Chicorica Creek at NM 72	04Chicor029.4	Chicorica Creek (East Fork Chicorica to headwaters)	Lowest station in AU, impariments.	
48	East Fork Chicorica Creek above Chicorica Creek	04EFChic001.0	East Fork Chicorica Creek (Chicorica Creek to headwaters)	Only station in AU, impairments.	
49	Chicorica Creek below Una de Gato Creek	04Chicor010.9	Chicorica Creek (Canadian River to East Fork Chicorica)	Only station in AU.	
49.1	Hunter Creek above Una de Gato	05hunter000.1	Hunter Creek (Throttle Reservoir to headwaters)	Added to document flow. No samples scheduled.	
50	Una de Gato Creek aboveNM 64	04UnaGat013.2	Una de Gato Creek (HWY 64 to headwaters)	Only station in AU, impairments.	Nutrient/Eutrophication Biological Indicators
51	Una de Gato Creek above Chicorica Creek	04UnaGat000.1	Una de Gato Creek (Chicorica Creek to HWY 64)	Only station in AU, impairments.	Nutrient/Eutrophication Biological Indicators
52	Doggett Creek above Raton WWTP	04Dogget002.3	Doggett Creek (Raton Creek to headwaters)	Above Raton WWTP	
53	Raton WWTP	NM0020273	Raton Creek (Chicorica Creek to headwaters)	NPDES Sampling.	
54	Doggett Creek below Raton WWTP	04Dogget002.2	Doggett Creek (Raton	Lowest in AU, below Raton WWTP	

Map #	Station Name	Station ID	Assessment Unit	Rationale/Comments	Current Impairments*
			Creek to headwaters)		
55	Raton Creek at McAuliffe Ranch	04RatonC005.1	Raton Creek (Chicorica Creek to hdwtrs)	Only station in AU	Escherichia coli|Nutrient/Eutrophication Biological Indicators
56	Tinaja Creek above West Fork Tinaja Creek	04Tinaja010.1	Tinaja Creek (Canadian River to headwaters)	Lowest station in AU, restoration project	
56.1	Tinaja Creek above Canadian River	04Tinaja001.9	Tinaja Creek (Canadian River to headwaters)	Normally dry. Samples taken in 2015 when wet.	
57	Maxwell Lake 13	04MaxLk13Deep	Maxwell Lake 13	Recreation Lake.	
58	Maxwell Lake 13 inlet	MaxLk13InLt	Unassessed Waters	Lake Inlet.	
59	Maxwell Lake 13 outlet	04MaxLK13OutL	Unassessed Waters	Lake Outlet.	
60	Canadian River at I-25	04Canadi416.5	Canadian River (Cimarron River to CO border)	Possible AU break.	Nutrient/Eutrophication Biological Indicators
61	Canadian River above Cimarron River	04Canadi352.7	Canadian River (Cimarron River to CO border)	Lowest station in AU, impariments.	Nutrient/Eutrophication Biological Indicators
62	Canadian River at NM 120	06Canadi274.8	Canadian River (Mora River to Cimarron River)	Only station in AU.	
63	Caliente Canyon above Vermejo River	04Calien000.1	Caliente Canyon (Vermejo River to headwaters)	Only station in AU, impairments.	Specific Conductance
64	Leandro Creek at Vermejo Boundary	04Leandr013.8	Leandro Creek (Vermejo River to headwaters)	Replaced with map # 64.1.	
64.1	Leandro Creek ~5km abv Vermejo River	04Leandr005.7	Leandro Creek (Vermejo River to headwaters)	Lowest staton in AU.	
65	VanBremmer Creek at NM 64	04VanBre009.4	VanBremmer Creek (HWY 64 to headwaters)	Only station in AU.	Specific Conductance|Temperature, water|Turbidity
66	York Canyon above Vermejo River	04YorkCa000.1	York Canyon (Vermejo River to headwaters)	Only station in AU, impairments, restoration projects.	Specific Conductance|Turbidity
67	Vermejo River above York Canyon	04Vermej076.0	Vermejo River (York Canyon to headwaters)	Only station in AU, impairments, restoration projects.	Benthic-Macroinvertebrate Bioassessments|Temperature, water
67.1	Vermejo River at Juan Baca Canyon - 04Vermej080.2	04Vermej080.2	Vermejo River (York Canyon to headwaters)	Above mine.	Benthic-Macroinvertebrate Bioassessments|Temperature, water

Map #	Station Name	Station ID	Assessment Unit	Rationale/Comments	Current Impairments*
67.2	Vermejo River abv Rock Creek - 04Vermej090.5	04Vermej090.5	Vermejo River (York Canyon to North Fork Vermejo River)	Possible AU break.	Benthic-Macroinvertebrate Bioassessments|Temperature, water
67.3	Vermejo River below York Canyon	04Vermej073.7	Vermejo River (Rail Canyon to York Canyon)	Moved station lower in AU.	Specific Conductance|Temperature, water
68	Vermejo River above Rail Canyon	04vermej039.5	Vermejo River (Rail Canyon to York Canyon)	Only station in AU, impairments.	Specific Conductance|Temperature, water
68.1	Vermejo River below confluence with Leandro Creek - 04Vermej094.1	04Vermej094.1	Vermejo River (Rail Canyon to York Canyon)	Possible AU break.	Benthic-Macroinvertebrate Bioassessments|Temperature, water
69	Vermejo River above Stubblefield Diversion	04vermej037.0	Vermejo River (Canadian River to Rail Canyon)	Moved station closer to Rail Canyon to bracket	Low flow alterations
69.1	Vermejo River at I-25	04Vermej002.9	Vermejo River (Canadian River to Rail Canyon)	Lowest station in AU	Low flow alterations
69.2	Vermejo River (downstream of) Dawson (below conf with Rail) - 04Vermej038.8	04Vermej038.8	Vermejo River (Canadian River to Rail Canyon)	Sampled to bracket Rail Canyon.	Low flow alterations
70	Lower Charette Lake	06LoCharetteD	Charette Lake (Lower)	Recreation Lake.	Mercury in Fish Tissue
71	Lower Charette Lake Inlet	06LoCharInlet	Charette Lake (Lower)	Lake Inlet.	Mercury in Fish Tissue
72	Lower Charette Lake Outlet	06LoChareOut	Charette Lake (Lower)	Lake Outlet.	Mercury in Fish Tissue
73	Wheaten Creek above Ocate Creek	06Wheate000.8	Wheaten Creek (Manuelas Creek to headwaters)	Chem station.	
73.1	Wheaten Creek below Bonita Creek	06Wheate007.3	Wheaton Creek (Manuelas Creek to headwaters)	Moved station above split channel.	
73.2	Wheaten Cr abv Bonita Cr - 06Wheate008.9	06Wheate008.9	Wheaton Creek (Manuelas Creek to headwaters)	Thermograph station.	
74	Manuelas Creek above Ocate Creek	06Manuel008.7	Manueles Creek (Ocate Creek to headwaters)	Only station in AU.	
75	Ocate Creek above Ocate Village	06OcateC063.0	Ocate Creek (Ocate to Wheaten Creek)	Only station in AU.	Low flow alterations

Map #	Station Name	Station ID	Assessment Unit	Rationale/Comments	Current Impairments*
76	Ocate creek at I-25	06OcateC025.1	Ocate Creek (Canadian River to Ocate)	Only station in AU, impairments.	
77	Lujan Canyon above Mora River	07LujanC000.1	Lujan Canyon (Luna Creek to headwaters)	New Station.	
78	Luna Creek above Mora River	07LunaCr000.1	Luna Creek (Mora River to headwaters)	New Station.	
79	Mora River at Cleveland Village	07MoraRi154.8	Mora River (HWY 434 to Luna Creek)	Only station in AU, above Mora WWTP.	Sedimentation/Siltation|Specific Conductance
80	Wolf Creek above Mora River	07WolfCr000.6	Wolf Creek (Mora River to headwaters)	Only station in AU, impairments.	Low flow alterations
81	Coyote Creek above Black Lake	07Coyote057.0	Coyote Creek (Black Lake to headwaters)	Only station in AU.	
82	Little Coyote Creek at NM 434	07LitCoy001.3	Little Coyote Creek (Black Lake to headwaters)	Only station in AU, impairments.	Nutrient/Eutrophication Biological Indicators|pH
83	La Jara Creek above Coyote Creek	07LaJara016.6	La Jara Creek (Coyote Creek to headwaters)	New station.	
84	Coyote Creek at USGS Gage at Thal Ranch	07Coyote004.2	Coyote Creek (Mora River to Black Lake)	Lowest station in AU, impariments.	Specific Conductance|Temperature, water
85	Coyote Creek at Coyote State Park	07Coyote040.0	Coyote Creek (Mora River to Black Lake)	Possible AU break.	Temperature, water
86	Santiago Creek at NM 94	07Santia002.3	Santiago Creek (Rito Cebolla to headwaters)	Only station in AU, RGCT stream.	
86.1	Santiago Creek at Monte Aplanado Rd	07Santia012.3	Santiago Creek (Rito Cebolla to headwaters)	Dry due to diversion.	
87	Morphy Lake	07MorphyLake2	Morphy (Murphy) Lake	Recreation Lake.	
88	Morphy Lake Inlet	07MorphyInlet	Morphy (Murphy) Lake	Lake Inlet.	
89	Morphy Lake Outlet	07MorphOutlet	Morphy (Murphy) Lake	Lake Outlet.	
90	Rito Morphy above Cebolla Creek	07RMorph001.6	Rito Morphy (Rito Cebolla to headwaters)	Only station in AU, Rio Grande Cutthroat Trout stream.	
90.1	Rito Morphy at Upper Murphy Valley Rd	07RMorph008.8	Rito Morphy (Rito Cebolla to headwaters)	Thermograph station.	

Map #	Station Name	Station ID	Assessment Unit	Rationale/Comments	Current Impairments*
91	Rito Cebolla at NM 161	07RitoCe000.3	Rito Cebolla (Mora River to headwaters)	Only station in AU.	
91.1	Rito Cebolla above hwy 518 - 07RitoCe004.6	07RitoCe004.6	Rito Cebolla (Mora River to headwaters)	Only station in AU.	
92	Maestas Creek above Manuelitas Creek	07Maesta000.4	Maestas Creek (Manuelitas Creek to headwaters)	Only station in AU.	
93	Rito Gascon above Rito San Jose	07RGasco002.0	Rito de Gascon (Rito San Jose to headwaters)	Only station in AU, possible reference site.	
94	Rito San Jose above Manuelitas Creek	07RSanJo000.5	Rito San Jose (Manuelitas Creek to headwaters)	Only station in AU, impairments.	Low flow alterations
94.1	Rito San Jose above Rio de Gascon	07RSanJo009.2	Rito San Jose (Manuelitas Creek to headwaters)	Thermograph station.	Low flow alterations
95	Manuelitas Creek at NM 94	07Manuel006.1	Manuelitas Creek (Sapello River to headwaters)	Moved station lower in AU.	
95.1	Manuelitas Creek abv Sapello River	07Manuel000.2	Manuelitas Creek (Sapello River to headwaters)	Lowest station in AU.	
95.2	Sparks Ck. abv Maestas Cr. - 07Sparks000.3	07Sparks000.3	Sparks Creek (Maestas Creek to headwaters)	Only station in AU.	
95.3	Manuelitas Creek blw Rociada - 07Manuel021.7	07Manuel021.7	Manuelitas Creek (Rito San Jose to Maestas Creek)	Only station in AU.	
96	Sapello River at San Ignacio	07Sapell052.4	Sapello River (Manuelitas Creek to headwaters)	Only station in AU.	
97	Sapello River at NM 161	07Sapell000.1	Sapello River (Mora River to Manuelitas Creek)	Only station in AU, impairments.	Sedimentation/Siltation
98	Rio de la Casa above Mora River	07RioLaC006.2	Rio la Casa (Mora River to confl of North and South Forks)	Moved station lower in AU.	
98.1	Rio de la Casa above Mora River	07RioLaC002.8	Rio la Casa (Mora River to confl of North and South Forks)	Lowest station in AU.	

Map #	Station Name	Station ID	Assessment Unit	Rationale/Comments	Current Impairments*
99	Mora River at la Cueva	07MoraRi139.9	Mora River (USGS gage east of Shoemaker to HWY 434)	Below Mora WWTP, impairments.	Nutrient/Eutrophication Biological Indicators|Oxygen, Dissolved
100	Mora WWTP	NM0024996	Mora River (USGS gage east of Shoemaker to HWY 434)	NPDES Sampling.	Nutrient/Eutrophication Biological Indicators|Oxygen, Dissolved
101	Mora River at Black Willow Ranch	07MoraRi086.0	Mora River (USGS gage east of Shoemaker to HWY 434)	Geomorph site, thermograph deployment.	Nutrient/Eutrophication Biological Indicators|Oxygen, Dissolved
102	Mora River at Watrous	07MoraRi094.0	Mora River (USGS gage east of Shoemaker to HWY 434)	Lowest station in AU, impairments.	Nutrient/Eutrophication Biological Indicators|Oxygen, Dissolved
103	Mora River above Canadian River	07MoraRi000.8	Mora River (Canadian River to USGS gage east of Shoemaker)	Only station in AU, impairments.	
103.1	Mora River abv Canon Ancho - 07MoraRi041.3	07MoraRi041.3	Mora River (Canadian River to USGS gage east of Shoemaker)	Changed station due to access	
104	Canadian River at Mills Canyon	06Canadi305.0	Canadian River (Mora River to Cimarron River)	Reference site.	
105	Conchas River at NM 104	08Concha025.1	Conchas River (Conchas Lake to headwaters)	Only station in AU, lake inlet.	
106	Trementina Creek below Arroyo Rendia	08Tremen026.2	Unassessed waters with no AU	Only station in AU	
107	Conchas Reservoir near Dam	08ConResNrDam	Conchas Reservoir	Recreation lake, public water supply.	Mercury in Fish Tissue|Nutrient/Eutrophication Biological Indicators|PCB in Fish Tissue
108	Conchas Reservoir near Rattlesnake	08ConResNrRat	Conchas Reservoir	Lake arm station.	Mercury in Fish Tissue|Nutrient/Eutrophication Biological Indicators|PCB in Fish Tissue
109	Conchas Reservoir at Canadian River Arm	08ConResCaArm	Conchas Reservoir	Lake arm station.	Mercury in Fish Tissue|Nutrient/Eutrophication Biological Indicators|PCB in Fish Tissue
110	Canadian River at NM 419	06Canadi232.6	Canadian River (Conchas River to Mora River)	Lowest station in AU, lake inlet.	Escherichia coli

Map #	Station Name	Station ID	Assessment Unit	Rationale/Comments	Current Impairments*
111	Canadian River below Conchas Dam	09Canadi204.1	Canadian River (Ute Reservoir to Conchas Reservoir)	Lake Outlet. No release ever observed. Not sampled.	Escherichia coli
111.1	Conchas outlet at irrigation canal	08ConResOutlr		Lake Outlet.	Mercury in Fish Tissue|Nutrient/Eutrophication Biological Indicators|PCB in Fish Tissue
112	Canadian River above Pajarito Creek	09Canadi102.4	Canadian River (Ute Reservoir to Conchas Reservoir)	No access.	
112.1	Canadian River at NM 104 at milemarker 88 - 09Canadi144.5	09Canadi144.5	Canadian River (Ute Reservoir to Conchas Reservoir)	Lowest station in AU.	Escherichia coli
113	Pajarito Creek above Canadian River	09Pajari001.0	Pajarito Creek (Canadian River to headwaters)	No access.	Escherichia coli|Nutrient/Eutrophication Biological Indicators
113.1	Pajarito Creek Below Noname Creek	09Pajari013.8	Pajarito Creek (Canadian River to headwaters)	Lowest station in AU with access, below Tucumcari WWTP and No Name Creek.	Escherichia coli|Nutrient/Eutrophication Biological Indicators
114	Pajarito Creek at NM 104	09Pajari020.0	Pajarito Creek (Canadian River to headwaters)	Above Tucumcari WWTP and No Name Creek.	Escherichia coli|Nutrient/Eutrophication Biological Indicators
115	Revuelto Creek above Canadian River	11Revuel003.9	Revuelto Creek (Canadian River to headwaters)	Only station in AU.	Boron
116	Tucumcari WWTP	NM0020711		NPDES Sampling.	Escherichia coli|Nutrient/Eutrophication Biological Indicators
117	No Name Creek above Pajarito Creek	09NoName002.1	No Name Creek (Pajarito Creek to headwaters)	NPDES Sampling. Dry.	
117.1	Breen's pond near outlet	09BreensPondNrOutlet		NPDES Sampling.	
118	Ute Creek near Logan Village	10UteCre007.5	Ute Creek (Ute Reservoir to headwaters)	Lowest station in AU, lake inlet.	
119	Ute Reservoir near Dam	09UteResNrDam	Ute Reservoir	Recreation lake, public water supply.	Aluminum|Mercury in Fish Tissue|PCB in Fish Tissue
120	Ute Reservoir near Horseshoe	09UteResAtHor	Ute Reservoir	Lake arm station.	Aluminum|Mercury in Fish Tissue|PCB in Fish Tissue
120.1	Ute Reservoir Canadian Arm - 09UteResAtCan	09UteResAtCan	Ute Reservoir	Lake arm station.	Aluminum|Mercury in Fish Tissue|PCB in Fish Tissue

Map #	Station Name	Station ID	Assessment Unit	Rationale/Comments	Current Impairments*
121	Ute Reservoir at Ute Creek Arm	09UteResAtUte	Ute Reservoir	Lake arm station.	Aluminum|Mercury in Fish Tissue|PCB in Fish Tissue
122	Ute Creek at NM 102	10UteCre104.3	Ute Creek (perennial prt Bueyeros Ck to Palo Blanco Creek)	Reference site.	
123	Ute Creek at Hwy_120	10UteCre150.7	Ute Creek (Perennial prt Bueyeros Ck to Palo Blanco Creek)	Possible AU break. Restoration project.	
124	CANADIAN R 1.0 MI BL UTE DAM,NM at hwy 54 near USGS gage	09Canadi062.4	Canadian River (TX border to Ute Reservoir)	Moved lake station closer to dam,	
124.1	Canadian River below Ute Dam	09Canadi065.4	Canadian River (TX border to Ute Reservoir)	Lake outlet, restoration project.	
125	Canadian River above TX State Line	09Canadi001.2	Canadian River (TX border to Ute Reservoir)	Lowest station in AU, state boundary. No access.	
125.1	Canadian River near TX line	09Canadi003.9	Canadian River (TX border to Ute Reservoir)	New station created due to access from State Land Office.	
126	Seneca Creek above Clayton Lake	16Seneca043.0	Seneca Creek (Perennial reaches abv Clayton Lake)	Lake inlet, reference site.	
127	Clayton Lake	16ClaytonDeep	Clayton Lake	Recreation lake.	Mercury in Fish Tissue
128	Seneca Creek at CR 370	16Seneca037.9	Seneca Creek (Perennial reaches below Clayton Lake)	Lake outlet, station moved closer to dam.	Mercury in Fish Tissue
128.1	Seneca Creek Blw Clayton Lake - 16Seneca040.2	16Seneca040.2	Clayton Lake	Lake outlet	Mercury in Fish Tissue

NOTES: * From the 2016-2018 State of New Mexico CWA 303(d)/305(b) Integrated Report (NMED/SWQB 2016b)

Chemical Sampling

Generally speaking, only one chemical sampling station was planned near the lower end of each AU, access permitting. Additional stations were located to document the condition downstream of potential pollution sources and where AU or water quality standards revisions are recommended. Stations from previous surveys were used whenever possible to evaluate trends. Water samples for chemical analyses were submitted to the New Mexico Scientific Laboratory Division (SLD). *E.coli* samples were processed in the SWQB laboratory or with mobile equipment. Water quality analytes and their sampling frequencies are outlined in **Table 5**. In addition to the

analytes listed in **Table 5**, field measurements (temperature, specific conductance, dissolved oxygen (DO) concentration, DO percent saturation, pH, and turbidity) were taken during each sampling visit **Table 6**.

Table 5. Summary of Completed/Planned Chemical Samples for the Canadian and Dry Cimarron project.

Map #	Station Name	Ions/TDS/TSS		Total Nutrients[1]		Total Metals (Hg, Se, Al)[2]		Dissolved Metals[2]		E. coli		Volatile Organic Compounds[3]		Semi-volatile Organics[3]		Radionuclides[4]	
Planned/Done		**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**
1	Carrizozo Creek near NM 406 (DCR 12)	4	0	4	0	2	0	2	0	4	0	0	0	0	0	0	0
2	Dry Cimarron River at Wedding Cake Butte	12	11	12	12	6	6	6	6	12	11	2	3	2	2	2	2
3	Dry Cimarron River above Long Canyon (DCR 05)	8	10	8	10	4	6	4	6	8	9	0	0	0	0	0	0
4	Long Canyon above NM 456 (DCR 06)	8	9	8	10	4	4	4	5	8	9	0	0	0	0	0	0
5	Oak Creek above Dry Cimarron River (DCR 03)	4	0	4	0	2	0	2	0	4	0	0	0	0	0	0	0
6.1	Dry Cimarron River below Folsom Falls - 02DryCim114.9	4	9	4	8	2	5	2	5	4	8	0	0	0	0	0	0
7	North Shuree Pond	6	5	6	5	2	3	2	5	6	5	0	2	0	1	0	1
8	Shuree Creek above North Shuree Pond	6	0	6	0	0	0	0	0	6	0	0	0	0	0	0	0
9	Shuree Creek below North Shuree Pond	6	0	6	0	0	0	0	0	6	0	0	0	0	0	0	0
10.1	Middle Ponil Creek @ FR 1910/1914 - 05MPonil019.3	4	9	4	9	2	5	2	6	4	7	0	0	0	0	0	0
11	Middle Ponil Creek above South Ponil Creek	8	9	8	8	4	5	4	5	8	9	0	0	0	0	0	0
12	Greenwood Creek above Middle Ponil Creek	10	6	10	6	8	7	8	6	10	5	0	0	0	0	0	0
13	South Ponil above Middle Ponil Creek	4	5	4	5	4	4	4	4	4	5	0	0	0	0	0	0
14	South Ponil above North Ponil Creek	8	9	8	9	4	5	4	5	8	9	0	0	0	0	0	1
14.1	South Ponil Creek downstream of Pueblano Camp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15.1	North Ponil below FR 1950 - 05NPonil027.5	4	7	4	7	2	6	2	6	4	7	0	0	0	0	4	0

Map #	Station Name	Ions/TDS/TSS		Total Nutrients[1]		Total Metals (Hg, Se, Al)[2]		Dissolved Metals[2]		E. coli		Volatile Organic Compounds[3]		Semi-volatile Organics[3]		Radionuclides[4]	
Planned/Done		**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**
16	North Ponil Creek above South Ponil Creek	8	8	8	9	4	5	4	4	8	9	0	0	0	0	0	3
17	McCrystal Creek at USFS Campgound	8	9	8	9	4	5	4	4	8	9	0	0	0	0	0	0
18	Ponil Creek above NM 64	8	9	8	9	4	7	4	7	8	7	0	0	0	0	0	0
19	Ponil Creek above Cimarron River	8	10	8	11	4	6	4	7	8	10	0	3	0	3	0	2
20	American Creek above Cieneguilla Creek	8	9	8	9	4	6	4	7	8	9	0	0	0	0	0	0
21	Saladon Creek above Cieneguilla Creek	8	6	8	6	4	4	4	4	8	6	0	0	0	0	0	0
22	West Agua Fria Creek above Cieneguilla	4	5	4	5	4	4	4	4	4	5	0	0	0	0	0	0
23	Cieneguilla Creek at Angel Fire Road	12	15	12	16	6	13	6	9	12	16	0	0	0	0	0	0
24	Angel Fire WWTP	12	12	12	12	6	6	6	7	12	12	0	0	0	0	0	0
24.1	Angel Fire WWTP post uv	0	4	0	4	0	2	0	2	0	4	0	0	0	0	0	0
25	Cieneguilla Creek above Eagle Nest Lake	12	15	12	17	6	13	6	10	12	17	2	3	2	2	2	2
26	Sixmile Creek above US 64	8	11	8	12	4	6	4	4	8	11	0	0	0	0	0	0
27	Moreno Creek on NM 64	8	12	8	14	4	5	4	4	8	12	0	0	0	0	0	0
28	Eagle Nest Lake	6	7	6	7	3	4	3	5	6	7	2	2	2	2	2	3
29.1	Cimarron River at Eagle Nest Outlet - 05Cimarr078.1	3	6	3	6	2	2	2	2	3	6	0	0	0	0	0	0
30	Tolby Creek above Cimarron River	8	9	8	9	4	6	4	5	8	9	0	0	0	0	0	0
31	Clear Creek above Cimarron River	8	7	8	7	4	5	4	5	8	7	0	0	0	0	0	0
32	Ute Creek above US 64	8	8	8	9	4	5	4	6	8	8	2	0	2	0	2	0

Map #	Station Name	Ions/TDS/TSS		Total Nutrients[1]		Total Metals (Hg, Se, Al)[2]		Dissolved Metals[2]		E. coli		Volatile Organic Compounds[3]		Semi-volatile Organics[3]		Radionuclides[4]	
Planned/Done		**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**
33	Cimarron River at Cimarron Village	8	9	8	11	4	5	4	4	8	10	2	1	2	1	2	1
34	Cimarron River above Turkey Creek	8	10	8	11	4	4	4	5	8	10	0	0	0	0	0	0
34.1	Turkey Creek above Cimarron River	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Rayado Creek at NM 21	8	7	8	9	4	4	4	4	8	7	0	0	0	0	0	0
36.1	Rayado Creek near Zastrow Camp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Rayado Creek at Miami Lane	8	8	8	8	4	5	4	4	8	7	0	0	0	0	0	0
38	Cimarron River above Springer WWTP	14	10	14	11	7	6	7	7	14	10	0	0	0	0	0	0
40	Cimarron River below Springer WWTP	6	3	6	3	3	2	3	3	6	2	1	0	1	0	1	0
40.1	Cimarron River below Springer WWTP Ponds - 05Cimarr007.6	8	3	8	4	4	4	4	4	8	4	1	2	1	2	1	2
40.2	Cimarron abv Canadian River - 05Cimarr000.5	0	2	0	3	0	1	0	2	0	3	0	1	0	1	0	1
41	Springer Lake	6	4	6	4	2	2	2	2	6	4	2	1	2	1	2	1
42	Springer Lake inlet	6	0	6	0	0	0	0	0	6	0	0	0	0	0	0	0
43	Springer Lake outlet	6	4	6	4	0	0	0	0	6	3	0	0	0	0	0	0
44	Chicorica Creek above Lake Maloya	6	5	6	5	0	0	0	0	6	5	0	0	0	0	0	0
44.1	Lake Maloya Inlet at Schwachheim Creek	3	5	3	5	0	0	0	0	3	5	0	0	0	0	0	0
45	Lake Maloya	6	8	6	8	2	3	2	5	6	8	2	4	2	3	2	2
46.1	Chicorica Creek below Maloya	6	5	6	5	0	0	0	0	6	5	0	0	0	0	0	0
47	Chicorica Creek above East Fork Chicorica Creek	4	7	4	7	4	5	4	4	4	6	0	0	0	0	0	0

Map #	Station Name	Ions/TDS/TSS		Total Nutrients[1]		Total Metals (Hg, Se, Al)[2]		Dissolved Metals[2]		E. coli		Volatile Organic Compounds[3]		Semi-volatile Organics[3]		Radionuclides[4]	
Planned/Done		**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**
48	East Fork Chicorica Creek above Chicorica Creek	4	5	4	5	4	6	4	3	4	4	0	0	0	0	0	0
49	Chicorica Creek below Una de Gato Creek	4	6	4	6	4	6	4	4	4	6	0	2	0	2	0	2
49.1	Hunter Creek (Throttle Reservoir to headwaters)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	Una de Gato Creek aboveNM 64	8	8	8	8	4	5	4	5	8	7	0	0	0	0	0	0
51	Una de Gato Creek above Chicorica Creek	8	6	8	6	4	3	4	3	8	5	2	1	2	1	2	1
52	Doggett Creek above Raton WWTP	12	12	12	12	6	7	6	7	12	11	0	0	0	0	0	0
53	Raton WWTP	12	12	12	12	6	7	6	7	12	11	0	0	0	0	0	0
54	Doggett Creek below Raton WWTP	12	13	12	14	6	7	6	8	12	12	0	0	0	0	0	0
55	Raton Creek at McAuliffe Ranch	8	10	8	9	4	5	4	6	8	8	2	1	2	1	2	1
56	Tinaja Cr abv W Fk Tinaja Cr	4	6	4	6	2	4	2	5	4	6	0	0	0	0	0	0
56.1	Tinaja Creek above Canadian River - 04Tinaja001.9	4	3	4	3	2	1	2	1	4	2	0	0	0	0	0	0
57	Maxwell Lake 13	6	5	6	5	2	2	2	3	6	6	2	1	2	1	2	1
58	Maxwell Lake 13 inlet	6	2	6	2	0	0	0	0	6	2	0	0	0	0	0	0
59	Maxwell Lake 13 outlet	6	2	6	2	0	0	0	0	6	2	0	0	0	0	0	0
60	Canadian River at I-25	8	7	8	8	4	4	4	4	8	6	0	0	0	0	0	0
61	Canadian River above Cimarron River	8	8	8	9	4	9	4	6	8	10	2	4	2	3	2	3
62	Canadian River at NM 120	8	6	8	6	4	3	4	4	8	5	0	0	0	0	0	0
63	Caliente Canyon above Vermejo River	10	5	10	5	5	3	5	3	10	5	0	0	0	0	0	0

Map #	Station Name	Ions/TDS/TSS		Total Nutrients[1]		Total Metals (Hg, Se, Al)[2]		Dissolved Metals[2]		E. coli		Volatile Organic Compounds[3]		Semi-volatile Organics[3]		Radionuclides[4]	
Planned/Done		**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**
64.1	Leandro Creek 5km abv Vermejo River - 04Leandr005.7	4	7	4	7	2	2	2	3	4	7	0	0	0	0	0	0
65	VanBremmer Creek at NM 64	4	0	4	0	2	0	2	0	4	0	0	0	0	0	0	0
66	York Canyon above Vermejo River	8	6	8	6	4	3	4	3	8	6	0	2	0	2	0	0
67	Vermejo River above York Canyon	4	2	4	2	2	1	2	1	4	2	1	0	1	0	1	0
67.1	Vermejo River at Juan Baca Canyon - 04Vermej080.2	6	7	6	7	3	5	3	6	6	7	1	3	1	2	1	1
67.2	Vermejo River abv Rock Creek - 04Vermej090.5	6	7	6	8	3	4	3	3	6	7	0	1	0	1	0	0
67.3	Vermejo River below York Canyon	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
68	Vermejo River above Rail Canyon	10	5	10	6	5	4	5	3	10	5	2	1	2	1	2	0
68.1	Vermejo River below confluence with Leandro Creek - 04Vermej094.1	6	1	6	1	3	1	3	1	6	0	1	0	1	0	1	0
69.1	Vermejo River at I-25	6	6	6	6	3	4	3	4	6	6	1	1	1	1	1	1
69.2	Vermejo River (downstream of) Dawson (below conf with Rail) - 04Vermej038.8	6	4	6	5	3	4	3	3	6	4	1	2	1	1	1	0
70	Lower Charette Lake	6	4	6	4	2	2	2	2	6	4	2	1	2	1	2	1
71	Lower Charette Lake Inlet	6	1	6	1	0	0	0	0	6	1	0	0	0	0	0	0
72	Lower Charette Lake Outlet	6	0	6	0	0	0	0	0	6	0	0	0	0	0	0	0
73	Wheaton Creek above Ocate Creek	4	4	4	4	4	3	4	4	4	4	0	0	0	0	0	0
73.1	Wheaten Creek below Bonita Creek	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
73.2	Wheaten Cr abv Bonita Cr - 06Wheate008.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
74	Manuelas Creek above Ocate Creek	4	4	4	3	4	4	4	4	4	4	0	0	0	0	0	0

Map #	Station Name	Ions/TDS/TSS		Total Nutrients[1]		Total Metals (Hg, Se, Al)[2]		Dissolved Metals[2]		E. coli		Volatile Organic Compounds[3]		Semi-volatile Organics[3]		Radionuclides[4]	
Planned/Done		**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**
75	Ocate Creek above Ocate Village	2	0	2	0	2	0	2	0	2	0	0	0	0	0	0	0
76	Ocate creek at I-25	4	0	4	0	2	0	2	0	4	0	1	0	1	0	1	0
77	Lujan Canyon above Luna Creek	4	5	4	5	4	4	4	4	4	4	0	0	0	0	0	1
78	Luna Creek above Lujan Canyon	4	6	4	5	4	5	4	5	4	5	0	0	0	0	0	1
79	Mora River at Cleveland Village	12	11	12	12	6	5	6	6	12	10	2	1	2	2	2	2
80	Wolf Creek above Mora River	4	0	4	0	2	0	2	0	4	0	0	0	0	0	0	0
81	Coyote Creek above Black Lake	4	3	4	3	4	1	4	1	4	4	0	0	0	0	0	0
82	Little Coyote Creek at NM 434	10	8	10	8	5	4	5	4	10	8	0	0	0	0	0	0
83	La Jara Creek above Coyote Creek	6	0	6	0	4	0	4	0	6	0	0	0	0	0	0	0
84	Coyote Creek at USGS Gage at Thal Ranch	8	9	8	9	4	6	4	7	8	9	2	3	2	3	2	4
85	Coyote Creek at Coyote State Park	8	12	8	11	4	5	4	7	8	12	0	0	0	0	0	0
86	Santiago Creek at NM 94	4	1	4	0	2	1	2	1	4	1	0	0	0	0	0	0
86.1	Santiago Creek at Monte Aplanado Rd	0	1	0	1	0	1	0	1	0	1	0	0	0	0	0	0
87	Morphy Lake	6	5	6	6	2	2	2	2	6	4	2	1	2	1	2	1
88	Morphy Lake Inlet	6	4	6	4	0	0	0	0	6	3	0	0	0	0	0	0
89	Morphy Lake Outlet	6	2	6	2	0	0	0	0	6	1	0	0	0	0	0	0
90	Rito Morphy above Cebolla Creek	8	6	8	6	4	3	4	4	8	7	0	0	0	0	0	0
90.1	Rito Morphy at Upper Murphy Valley Rd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Map #	Station Name	Ions/TDS/TSS		Total Nutrients[1]		Total Metals (Hg, Se, Al)[2]		Dissolved Metals[2]		E. coli		Volatile Organic Compounds[3]		Semi-volatile Organics[3]		Radionuclides[4]	
Planned/Done		**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**
91	Rito Cebolla at NM 161	2	0	2	0	2	0	2	0	2	0	0	0	0	0	0	0
91.1	Rito Cebolla @ NM 518 - 07RitoCe004.6	0	3	0	4	0	3	0	3	0	4	0	0	0	0	0	0
92	Maestas Creek above Manuelitas Creek	4	5	4	4	4	4	4	5	4	6	0	0	0	0	0	0
93	Rito Gascon above Rito San Jose	8	7	8	6	4	4	4	5	8	8	0	0	0	0	0	0
94	Rito San Jose above Manuelitas Creek	10	7	10	6	5	5	5	5	10	6	0	0	0	0	0	0
94.1	Rito San Jose above Rio de Gascon	0	1	0	1	0	1	0	1	0	1	0	0	0	0	0	0
95	Manuelitas Creek at NM 94	2	0	2	0	2	0	2	0	2	0	0	0	0	0	0	0
95.1	Manuelitas Creek abv Sapello River - 07Manuel000.2	2	6	2	5	2	6	2	5	2	5	0	1	0	1	0	1
95.2	Sparks Ck. abv Maestas Cr. - 07Sparks000.3	2	4	2	4	2	3	2	3	2	4	0	0	0	0	0	0
95.3	Manuelitas Creek blw Rociada - 07Manuel021.7	2	4	2	4	2	2	2	2	2	4	0	0	0	0	0	0
96	Sapello River at San Ignacio	8	7	8	8	4	5	4	4	8	7	0	0	0	0	0	0
97	Sapello River at NM 161	8	9	8	10	4	5	4	6	8	8	2	2	2	2	2	3
98.1	Rio de la Casa above Mora River	2	6	2	6	2	3	2	4	2	5	0	0	0	0	0	1
99	Mora River at la Cueva	12	11	12	12	6	5	6	5	12	11	2	4	2	3	2	2
100	Mora WWTP	14	10	14	10	7	3	7	3	14	10	0	0	0	0	0	0
101	Mora River at Black Willow Ranch	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
102	Mora River at Watrous	12	12	12	14	6	7	6	7	12	7	0	0	0	1	0	1
103	Mora River above Canadian River	8	0	8	0	4	0	4	0	8	0	2	0	2	0	2	0

Map #	Station Name	Ions/TDS/TSS		Total Nutrients[1]		Total Metals (Hg, Se, Al)[2]		Dissolved Metals[2]		E. coli		Volatile Organic Compounds[3]		Semi-volatile Organics[3]		Radionuclides[4]	
Planned/Done		**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**
103.1	Mora River abv Canon Ancho - 07MoraRi041.3	0	5	0	4	0	2	0	2	0	4	0	1	0	0	0	1
104	Canadian River at Mills Canyon	8	6	8	7	4	5	4	5	8	6	2	2	2	1	2	1
105	Conchas River at NM 104	4	9	4	7	4	9	4	7	4	7	0	3	0	2	0	2
106	Trementina Creek below Arroyo Rendia	4	1	4	0	4	2	4	1	4	1	0	0	0	0	0	0
107	Conchas Reservoir near Dam	6	5	6	6	2	3	2	3	6	6	2	3	2	2	2	2
108	Conchas Reservoir near Rattlesnake	6	4	6	4	0	0	0	0	6	3	0	0	0	0	0	0
109	Conchas Reservoir at Canadian River Arm	6	4	6	4	0	0	0	0	6	3	0	0	0	0	0	0
110	Canadian River at NM 419	6	5	6	6	0	7	0	6	6	6	2	2	2	2	2	2
111	Canadian River below Conchas Dam	3	0	3	0	0	0	0	0	3	0	0	0	0	0	0	0
111.1	Conchas outlet at irrigation canal - 08ConResOutIr	4	2	4	3	0	0	0	0	4	2	0	0	0	0	0	0
112.1	Canadian River at NM 104 at milemarker 88 - 09Canadi144.5	6	5	6	5	3	5	3	3	6	5	2	2	2	2	2	2
113.1	Pajarito Creek Below Noname Creek - 09Pajari013.8	4	7	4	7	2	10	2	5	4	8	1	2	1	2	1	3
114	Pajarito Creek at NM 104	10	8	10	9	5	6	5	3	10	9	0	0	0	0	0	0
115	Revuelto Creek above Canadian River	8	8	8	10	4	7	4	7	8	10	2	3	2	3	2	3
116	Tucumcari WWTP	8	6	8	6	4	3	4	3	8	7	0	0	0	0	0	0
117.1	Breen's pond near outlet	10	7	10	8	5	4	5	3	10	7	0	0	0	0	0	0
118	Ute Creek near Logan Village	6	0	6	0	2	0	2	0	6	0	2	0	2	0	2	0
119	Ute Reservoir near Dam	6	7	6	8	2	3	2	5	6	9	2	2	2	2	2	2

Map #	Station Name	Ions/TDS/TSS		Total Nutrients[1]		Total Metals (Hg, Se, Al)[2]		Dissolved Metals[2]		E. coli		Volatile Organic Compounds[3]		Semi-volatile Organics[3]		Radionuclides[4]	
Planned/Done		**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**	**P**	**D**
120	Ute Reservoir near Horseshoe	3	2	3	2	0	0	0	0	3	2	0	0	0	0	0	0
120.1	Ute Reservoir Canadian Arm - 09UteResAtCan	4	0	4	1	0	0	0	0	4	1	0	0	0	0	0	0
121	Ute Reservoir at Ute Creek Arm	7	3	7	3	0	0	0	0	7	3	0	0	0	0	0	0
122	Ute Creek at NM 102	4	5	4	5	4	6	4	4	4	5	0	1	0	1	0	1
123	Ute Creek at NM 120	4	1	4	1	2	1	2	2	4	1	1	0	1	0	1	0
124	CANADIAN R 1.0 MI BL UTE DAM,NM at hwy 54 - 09Canadi062.4	4	5	4	3	2	1	2	1	4	4	0	1	0	1	0	1
124.1	Canadian River below Ute Dam	4	4	4	4	2	2	2	3	4	4	0	2	0	1	0	1
125.1	Canadian River near TX line	0	5	0	5	0	3	0	3	0	5	0	2	0	1	0	1
126	Seneca Creek above Clayton Lake	6	0	6	0	0	0	0	0	6	0	0	0	0	0	0	0
127	Clayton Lake	6	7	6	10	2	4	2	6	6	8	2	4	2	2	2	2
128	Seneca Creek at CR 370 - 16Seneca037.9	3	0	3	1	0	1	0	1	3	0	0	0	0	0	0	0
128.1	Seneca Creek below Clayton	3	0	3	0	0	0	0	0	3	0	0	0	0	0	0	0
	Totals	895	802	896	832	414	488	414	479	895	784	64	85	64	71	68	74

NOTES:

[1] Suite includes total Kjeldahl nitrogen, nitrate+nitrite, ammonia, and total phosphorus.

[2]Suite includes aluminum, antimony, arsenic, barium, boron, cadmium, calcium, chromium, cobalt, copper, iron, magnesium, manganese, molybdenum, nickel, silicon, silver, tin, vanadium, and zinc.

[3]Refer to Appendix A for a complete list of analytes.

[4]A radionuclide sample will include gross alpha and gross beta and, depending on detections, may include Uranium mass and Radium 226 + 228.

Long-term Dataset, Biological and Physical Habitat Sampling

Biological indicators and physical habitat measurements give an overall indication of the integrity of the AU. The SWQB uses this data to assess waterbodies for potential impairment from sediment deposition and nutrient enrichment and to support water quality standards revisions. Stations were selected for biological and physical habitat monitoring based on their current impairment status and results of preliminary nutrient and sedimentation assessments. Resources and access issues did not allow for the collection of biological and physical habitat data in all AUs. A summary of 2015-2016 biological and physical habitat monitoring appears below (**Table 6**).

Photo 1. Flow measurement at the Canadian River near Texas State line - 09Canadi003.9.

Table 6. Summary of Completed/Planned Biological and Habitat Sampling for the Canadian and Dry Cimarron project.

Map #	Station Name	Sonde/DO logger		Thermograph		Chlorophyll a		Phytoplankton		Periphyton		Physical Habitat		Flow		Fish Community		Benthic Macro-invertebrates	
Planned/Done		P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D
1	Carrizozo Creek near NM 406 (DCR 12)	0	0	0	0	0	0	0	0	0	0	0	0	8	2	0	0	0	0
2	Dry Cimarron River at Wedding Cake Butte	1	1	1	2	0	0	0	0	0	0	1	0	12	6	1	0	1	0
3	Dry Cimarron River above Long Canyon (DCR 05)	1	1	1	2	0	0	0	0	0	0	1	0	4	7	0	0	0	0

Map #	Station Name	Sonde/DO logger		Thermograph		Chlorophyll a		Phytoplankton		Periphyton		Physical Habitat		Flow		Fish Community		Benthic Macro-invertebrates	
Planned/Done		P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D
4	Long Canyon above NM 456 (DCR 06)	1	0	1	2	0	0	0	0	0	0	1	0	4	6	0	0	0	0
5	Oak Creek above Dry Cimarron River (DCR 03)	0	0	0	0	0	0	0	0	0	0	0	0	8	3	0	0	0	0
6.1	Dry Cimarron River below Folsom Falls - 02DryCim114.9	1	1	1	2	0	0	0	0	0	0	1	0	4	7	0	0	0	0
7	North Shuree Pond	0	0	0	0	6	3	6	3	0	0	0	0	0	0	0	0	0	0
8	Shuree Creek above North Shuree Pond	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0
9	Shuree Creek below North Shuree Pond	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0
10.1	Middle Ponil Creek @ FR 1910/1914 - 05MPonil019.3	1	3	1	2	0	1	0	0	0	0	1	1	8	7	0	0	0	0
11	Middle Ponil Creek above South Ponil Creek	1	2	1	2	0	0	0	0	0	0	1	1	8	5	0	0	0	0
12	Greenwood Creek above Middle Ponil Creek	1	2	1	1	0	0	0	0	0	0	1	1	8	6	0	0	0	0
13	South Ponil above Middle Ponil Creek	1	2	1	2	0	0	0	0	0	0	0	1	4	2	0	0	0	0
14	South Ponil above North Ponil Creek	1	1	1	2	0	0	0	0	0	0	1	1	4	7	0	0	0	0
14.1	South Ponil Creek downstream of Pueblano Camp	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15.1	North Ponil below FR 1950 - 05NPonil027.5	1	2	1	2	0	0	0	0	0	0	1	0	4	6	0	0	0	0
16	North Ponil Creek above South Ponil Creek	1	3	1	2	0	1	0	0	0	0	1	1	8	6	0	0	0	0

Map #	Station Name	Sonde/DO logger		Thermograph		Chlorophyll a		Phytoplankton		Periphyton		Physical Habitat		Flow		Fish Community		Benthic Macro-invertebrates	
Planned/Done		P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D
17	McCrystal Creek at USFS Campgound	1	2	1	2	0	0	0	0	0	0	1	1	8	8	0	0	0	0
18	Ponil Creek above NM 64	1	2	1	2	0	0	0	0	0	0	1	0	8	8	0	0	0	0
19	Ponil Creek above Cimarron River	1	1	1	1	0	0	0	0	0	0	1	0	4	5	0	0	0	0
20	American Creek above Cieneguilla Creek	1	1	1	1	0	0	0	0	0	0	1	1	8	8	0	0	0	0
21	Saladon Creek above Cieneguilla Creek	1	0	1	1	0	0	0	0	0	0	1	1	8	7	0	0	0	0
22	West Agua Fria Creek above Cieneguilla	1	0	1	1	0	0	0	0	0	0	0	0	4	5	0	0	0	0
23	Cieneguilla Creek at Angel Fire Road	0	1	0	0	0	1	0	0	0	1	0	0	12	11	0	0	0	0
24	Angel Fire WWTP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24.1	Angel Fire WWTP post uv	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	Cieneguilla Creek above Eagle Nest Lake	1	3	1	2	0	1	0	0	0	1	1	1	12	15	1	0	1	1
26	Sixmile Creek above US 64	1	3	1	2	0	1	0	0	0	1	1	1	8	11	0	0	0	0
27	Moreno Creek on NM 64	1	3	1	2	0	1	0	0	0	1	1	1	8	13	0	0	0	0
28	Eagle Nest Lake	0	0	0	0	6	5	6	6	0	0	0	0	0	0	0	0	0	0
29.1	Cimarron River at Eagle Nest Outlet - 05Cimarr078.1	0	0	0	0	0	0	0	0	0	0	0	0	6	6	0	0	0	0
30	Tolby Creek above Cimarron River	1	2	1	1	0	0	0	0	0	0	1	1	8	9	0	0	0	0
31	Clear Creek above Cimarron River	1	2	1	2	0	0	0	0	0	0	1	1	8	6	0	0	0	0
32	Ute Creek above US 64	1	2	1	1	0	0	0	0	0	0	1	0	8	6	0	0	0	0

Map #	Station Name	Sonde/DO logger		Thermograph		Chlorophyll a		Phytoplankton		Periphyton		Physical Habitat		Flow		Fish Community		Benthic Macro-invertebrates	
Planned/Done		P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D
33	Cimarron River at Cimarron Village	1	2	1	2	0	0	0	0	0	0	1	0	8	8	0	0	0	0
34	Cimarron River above Turkey Creek	1	3	1	2	0	2	0	0	0	1	1	1	8	7	0	0	0	0
34.1	Turkey Creek above Cimarron River	0	0	0	0	0	0	0	0	0	0	0	0	4	2	0	0	0	0
36	Rayado Creek at NM 21	1	2	1	2	0	0	0	0	0	0	1	0	8	7	0	0	0	0
36.1	Rayado Creek near Zastrow Camp	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Rayado Creek at Miami Lane	1	3	1	2	0	1	0	0	0	1	1	0	8	7	0	0	0	0
38	Cimarron River above Springer WWTP	1	1	0	0	0	0	0	0	0	0	0	0	12	5	0	0	0	0
40	Cimarron River below Springer WWTP	1	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
40.1	Cimarron River below Springer WWTP Ponds - 05Cimarr007.6	1	1	1	1	0	0	0	0	0	0	1	0	12	2	1	0	1	0
40.2	Cimarron abv Canadian River - 05Cimarr000.5		0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	Springer Lake	0	0	0	0	6	4	6	4	0	0	0	0	0	0	0	0	0	0
42	Springer Lake inlet	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0
43	Springer Lake outlet	0	0	0	0	0	0	0	0	0	0	0	0	6	4	0	0	0	0
44	Chicorica Creek above Lake Maloya	0	0	0	0	0	0	0	0	0	0	0	0	6	5	0	0	0	0
44.1	Lake Maloya	0	0	0	0	0	0	0	0	0	0	0	0	6	5	0	0	0	0
45	Lake Maloya	0	0	0	0	6	5	6	5	0	0	0	0	0	0	0	0	0	0
46.1	Chicorica Creek below Maloya	0	0	0	0	0	0	0	0	0	0	0	0	6	4	0	0	0	0
47	Chicorica Creek above East Fork Chicorica Creek	1	0	1	2	0	0	0	0	0	0	0	0	4	5	0	0	0	0

Map #	Station Name	Sonde/DO logger		Thermograph		Chlorophyll a		Phytoplankton		Periphyton		Physical Habitat		Flow		Fish Community		Benthic Macro-invertebrates	
Planned/Done		P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D
48	East Fork Chicorica Creek above Chicorica Creek	1	0	1	1	0	0	0	0	0	0	0	0	4	5	0	0	0	0
49	Chicorica Creek below Una de Gato Creek	1	2	1	2	0	0	0	0	0	0	0	0	4	5	0	0	0	0
49.1	Hunter Creek (Throttle Reservoir to headwaters)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
50	Una de Gato Creek aboveNM 64	1	0	1	2	0	0	0	0	0	0	1	0	4	7	0	0	0	0
51	Una de Gato Creek above Chicorica Creek	1	0	1	2	0	0	0	0	0	0	1	0	4	4	0	0	0	0
52	Doggett Creek above Raton WWTP	1	0	0	0	0	0	0	0	0	0	0	0	12	8	0	0	0	0
53	Raton WWTP	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0
54	Doggett Creek below Raton WWTP	1	1	1	1	0	0	0	0	0	0	1	0	12	6	1	0	1	0
55	Raton Creek at McAuliffe Ranch	1	1	1	2	0	0	0	0	0	0	1	0	8	7	0	0	0	0
56	Tinaja Cr abv W Fk Tinaja Cr	1	1	1	1	0	1	0	0	0	1	1	0	4	5	0	0	0	0
56.1	Tinaja Creek above Canadian River - 04Tinaja001.9	0	0	0	1	0	0	0	0	0	0	0	0	4	2	0	0	0	0
57	Maxwell Lake 13	0	0	0	0	6	4	6	4	0	0	0	0	0	0	0	0	0	0
58	Maxwell Lake 13 inlet	0	0	0	0	0	0	0	0	0	0	0	0	6	2	0	0	0	0
59	Maxwell Lake 13 outlet	0	0	0	0	0	0	0	0	0	0	0	0	6	2	0	0	0	0
60	Canadian River at I-25	1	0	1	1	0	0	0	0	0	0	1	0	8	7	0	0	0	0
61	Canadian River above Cimarron River	1	1	1	1	0	0	0	0	1	0	1	0	8	7	0	0	0	0
62	Canadian River at NM 120	1	0	1	1	3	0	0	0	1	0	1	0	8	3	0	0	0	0

Map #	Station Name	Sonde/DO logger		Thermograph		Chlorophyll a		Phytoplankton		Periphyton		Physical Habitat		Flow		Fish Community		Benthic Macro-invertebrates	
Planned/Done		P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D
63	Caliente Canyon above Vermejo River	1	0	1	0	3	0	0	0	0	0	1	0	8	4	0	0	0	0
64.1	Leandro Creek 5km abv Vermejo River - 04Leandr005.7	1	0	1	0	0	0	0	0	0	0	0	0	4	5	0	0	0	0
65	VanBremmer Creek at NM 64	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0
66	York Canyon above Vermejo River	1	1	1	0	0	0	0	0	0	0	1	0	8	6	0	0	0	0
67	Vermejo River above York Canyon	1	0	1	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0
67.1	Vermejo River at Juan Baca Canyon - 04Vermej080.2	1	1	1	1	0	0	0	0	0	0	1	1	4	6	0	0	0	0
67.2	Vermejo River abv Rock Creek - 04Vermej090.5	0	0	1	0	0	0	0	0	0	0	0	0	2	6	0	0	0	0
67.3	Vermejo River below York Canyon		0		0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
68	Vermejo River above Rail Canyon	1	1	1	0	0	0	0	0	0	0	1	0	8	5	0	0	0	0
68.1	Vermejo River below confluence with Leandro Creek - 04Vermej094.1	0	0	1	1	0	0	0	0	0	0	0	0	2	1	0	0	0	0
69.1	Vermejo River at I-25	1	0	1	0	0	0	0	0	0	0	1	0	4	5	0	0	0	0
69.2	Vermejo River (downstream of) Dawson (below conf with Rail) - 04Vermej038.8		0		1	0	0	0	0	0	0	0	0	0	5	0	0	0	0
70	Lower Charette Lake	0	0	0	0	6	4	6	4	0	0	0	0	0	0	0	0	0	0
71	Lower Charette Lake Inlet	0	0	0	0	0	0	0	0	0	0	0	0	6	1	0	0	0	0

Map #	Station Name	Sonde/DO logger		Thermograph		Chlorophyll a		Phytoplankton		Periphyton		Physical Habitat		Flow		Fish Community		Benthic Macro-invertebrates	
Planned/Done		P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D
72	Lower Charette Lake Outlet	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0
73	Wheaton Creek above Ocate Creek	1	1	1	1	0	0	0	0	0	0	0	0	4	3	0	0	0	0
73.1	Wheaten Creek below Bonita Creek	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
73.2	Wheaten Cr abv Bonita Cr - 06Wheate008.9		0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
74	Manuelas Creek above Ocate Creek	1	1	1	1	0	0	0	0	0	0	0	0	4	4	0	0	0	0
75	Ocate Creek above Ocate Village	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0
76	Ocate creek at I-25	1	0	1	0	0	0	0	0	0	0	1	0	8	3	0	0	0	0
77	Lujan Canyon above Luna Creek	1	0	1	2	0	0	0	0	0	0	0	0	4	5	0	0	0	0
78	Luna Creek above Lujan Canyon	1	0	1	2	0	0	0	0	0	0	0	0	4	5	0	0	0	0
79	Mora River at Cleveland Village	1	1	1	2	0	0	0	0	0	0	1	1	12	10	1	0	1	1
80	Wolf Creek above Mora River	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
81	Coyote Creek above Black Lake	1	1	1	2	0	0	0	0	0	0	1	0	2	2	0	0	0	0
82	Little Coyote Creek at NM 434	1	1	1	2	0	0	0	0	0	0	1	1	8	7	0	0	0	0
83	La Jara Creek above Coyote Creek	1	0	1	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
84	Coyote Creek at USGS Gage at Thal Ranch	1	2	1	2	0	1	0	0	0	1	1	1	8	5	0	0	0	0
85	Coyote Creek at Coyote State Park	1	1	1	2	0	0	0	0	0	0	1	1	8	7	0	0	0	0
86	Santiago Creek at NM 94	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0

Map #	Station Name	Sonde/DO logger		Thermograph		Chlorophyll a		Phytoplankton		Periphyton		Physical Habitat		Flow		Fish Community		Benthic Macro-invertebrates	
Planned/Done		P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D
86.1	Santiago Creek at Monte Aplanado Rd		0		0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
87	Morphy Lake	0	0	0	0	6	4	6	4	0	0	0	0	0	0	0	0	0	0
88	Morphy Lake Inlet	0	0	0	0	0	0	0	0	0	0	0	0	6	4	0	0	0	0
89	Morphy Lake Outlet	0	0	0	0	0	0	0	0	0	0	0	0	6	2	0	0	0	0
90	Rito Morphy above Cebolla Creek	1	1	1	2	0	0	0	0	0	0	1	0	8	6	0	0	0	0
90.1	Rito Morphy at Upper Murphy Valley Rd	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
91	Rito Cebolla at NM 161	1	0	1	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0
91.1	Rito Cebolla @ NM 518 - 07RitoCe004.6	1	2	1	2	0	0	0	0	0	0	0	0	2	4	0	0	0	0
92	Maestas Creek above Manuelitas Creek	1	1	0	2	0	0	0	0	0	0	0	0	4	5	0	0	0	0
93	Rito Gascon above Rito San Jose	1	1	1	2	0	0	0	0	0	0	1	0	8	5	0	0	0	0
94	Rito San Jose above Manuelitas Creek	1	1	1	2	0	0	0	0	0	0	1	0	4	6	0	0	0	0
94.1	Rito San Jose above Rio de Gascon	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	0
95	Manuelitas Creek at NM 94	1	1	1	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0
95.1	Manuelitas Creek abv Sapello River - 07Manuel000.2	1	1	1	1	0	0	0	0	0	0	0	0	2	5	0	0	0	0
95.2	Sparks Ck. abv Maestas Cr. - 07Sparks000.3	1	1	1	2	0	0	0	0	0	0	0	0	2	4	0	0	0	0
95.3	Manuelitas Creek blw Rociada - 07Manuel021.7	1	1	1	2	0	0	0	0	0	0	0	0	2	4	0	0	0	0
96	Sapello River at San Ignacio	1	1	1	2	0	0	0	0	0	0	1	1	8	6	0	0	0	0

Map #	Station Name	Sonde/DO logger		Thermograph		Chlorophyll a		Phytoplankton		Periphyton		Physical Habitat		Flow		Fish Community		Benthic Macro-invertebrates	
Planned/Done		P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D
97	Sapello River at NM 161	1	3	1	2	0	0	0	0	0	0	1	0	8	7	0	0	0	0
98.1	Rio de la Casa above Mora River	1	0	1	2	0	0	0	0	0	0	0	0	4	5	0	0	0	0
99	Mora River at la Cueva	1	3	1	1	0	0	0	0	0	0	1	0	12	7	1	0	1	0
100	Mora WWTP	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	0
101	Mora River at Black Willow Ranch	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0
102	Mora River at Watrous	1	3	0	1	0	0	0	0	0	0	0	0	12	8	0	0	0	0
103	Mora River above Canadian River	1	0	1	0	0	0	0	0	0	0	1	0	8	0	0	0	0	0
103.1	Mora River abv Canon Ancho - 07MoraRi041.3	0	0	0	1	0	0	0	0	0	0	0	0	8	4	0	0	0	0
104	Canadian River at Mills Canyon	1	1	1	1	3	2	0	0	0	1	1	0	8	3	0	0	0	0
105	Conchas River at NM 104	1	2	1	2	0	0	0	0	0	0	0	0	4	6	0	0	0	0
106	Trementina Creek below Arroyo Rendia	1	0	1	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0
107	Conchas Reservoir near Dam	0	0	0	0	6	4	6	5	0	0	0	0	0	0	0	0	0	0
108	Conchas Reservoir near Rattlesnake	0	0	0	0	6	4	6	4	0	0	0	0	0	0	0	0	0	0
109	Conchas Reservoir at Canadian River Arm	0	0	0	0	6	4	6	4	0	0	0	0	0	0	0	0	0	0
110	Canadian River at NM 419	0	0	0	0	0	0	0	0	0	0	0	0	6	4	0	0	0	0
111	Canadian River below Conchas Dam	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0
111.1	Conchas outlet at irrigation canal - 08ConResOutIr	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0

Map #	Station Name	Sonde/DO logger		Thermograph		Chlorophyll a		Phytoplankton		Periphyton		Physical Habitat		Flow		Fish Community		Benthic Macro-invertebrates	
Planned/Done		P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D
112.1	Canadian River at NM 104 at milemarker 88 - 09Canadi144.5	1	1	1	1	3	0	0	0	1	0	1	0	4	5	0	0	0	0
113.1	Pajarito Creek Below Noname Creek - 09Pajari013.8	1	2	1	2	0	0	0	0	0	0	1	0	12	7	0	0	1	0
114	Pajarito Creek at NM 104	1	2	0	2	0	0	0	0	0	0	0	0	12	9	0	0	0	0
115	Revuelto Creek above Canadian River	1	1	1	1	0	0	0	0	0	0	1	0	8	2	0	0	0	0
116	Tucumcari WWTP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117.1	Breen's pond near outlet	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118	Ute Creek near Logan Village	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0
119	Ute Reservoir near Dam	0	0	0	0	6	5	6	5	0	0	0	0	0	0	0	0	0	0
120	Ute Reservoir near Horseshoe	0	0	0	0	6	2	6	2	0	0	0	0	0	0	0	0	0	0
120.1	Ute Reservoir Canadian Arm - 09UteResAtCan	0	0	0	0	6	1	6	1	0	0	0	0	0	0	0	0	0	0
121	Ute Reservoir at Ute Creek Arm	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0
122	Ute Creek at NM 102	1	1	1	2	0	0	0	0	0	0	0	0	4	5	0	0	0	0
123	Ute Creek at NM 120	1	0	1	1	1	0	0	0	0	0	1	0	8	2	0	0	0	0
124	CANADIAN R 1.0 MI BL UTE DAM,NM at hwy 54 near USGS gage 07227000 - 09Canadi062.4	1	1	1	2	3	0	0	0	0	0	1	0	4	2	0	0	0	0
124.1	Canadian River below Ute Dam	0	0	0	0	0	0	0	0	0	0	0	0	6	3	0	0	0	0
125.1	Canadian River near TX line	1	0	1	1	3	0	0	0	1	0	1	0	8	3	0	0	0	0

Map #	Station Name	Sonde/DO logger		Thermograph		Chlorophyll a		Phytoplankton		Periphyton		Physical Habitat		Flow		Fish Community		Benthic Macro-invertebrates	
Planned/Done		P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D	P	D
126	Seneca Creek above Clayton Lake	0	0	0	0	0	0	0	0	0	0	0	0	6	1	0	0	0	0
127	Clayton Lake	0	0	0	0	6	5	6	5	0	0	0	0	0	0	0	0	0	0
128	Seneca Creek at CR 370 - 16Seneca037.9	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0
128.1	Seneca Creek below Clayton	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
	Totals	87	97	89	120	103	70	84	59	4	9	61	21	773	566	7	0	8	2

Summary

A detailed FSP was prepared prior to beginning the survey in 2015; however, a significant number of deviations occurred over the course of the survey. The following are the primary causes for deviations from the FSP:

1. Sites were dry or went dry during sampling.
2. Rainstorms in the summer and fall of 2015 and 2016 caused scouring flows that prevented the collection of some habitat (pebble counts and physical habitat measurements) and biological (periphyton/chlorophyll, sonde deployments) data. The SWQB SOPs state that these types of data must be collected during stable conditions and at least 6 weeks after a scouring flow. The high frequency of scouring flows prevented acceptable streambed conditions.
3. Access in the Canadian River and Dry Cimarron Watersheds was delayed or was not granted for a number of stations resulting in reduced or no sampling at some stations.

For sites that went dry during the survey, if other perennial reaches are not identified in the AU and the drying is not due to diversion, the Hydrology Protocol should be conducted along a representative reach in the AU to determine if the appropriate WQS are being applied and to aid in future survey design.

The data from the 2015-2016 survey will be validated and verified according to SWQB SOPs (NMED/SWQB 2016c). All of the data will be uploaded to USEPA's STORET Data Warehouse via The Water Quality Exchange (WQX) where they are available to the public. All of the data collected during these surveys are also available by request to the Program Manager.

To supplement data collected for this project, SWQB accepts readily available water quality data submitted from outside sources that meet SWQB QA/QC review and documentation requirements. Data from outside sources will undergo review by the SWQB QA Officer to ensure only data meeting specific requirements are used for assessment purposes.

The data from this project will be assessed to determine the impairment status of the sampled waters. The assessments are conducted in accordance with the Procedures for Assessing Water Quality Standards Attainment for the State of New Mexico Integrated Clean Water Act §303(d)/§305(b) Integrated Report which are available on the SWQB website https://www.env.nm.gov/swqb/protocols/. Assessment conclusions will be incorporated into the 2018-2020 Integrated Report, which is planned for completion in 2018 and will be posted to the SWQB website at https://www.env.nm.gov/swqb/303d-305b/. In cases where impairments to water and habitat quality are found or confirmed, data from this survey will be used to draft TMDL planning documents.

ACKNOWLEGDEMENTS

NMED Surface Water Quality Bureau would like to thank all the following people and organizations for their support and assistance. The numerous private land owners who allowed us to access sites for sampling. Angel Fire, Springer, Raton, Mora, and Tucumcari WWTP's for assistance with sampling. NM State Parks for help in sampling lakes and giving us a place to stay. The NM State Land Office for providing access. Maxwell Wildlife Refuge for access and help with a flat tire. A special thanks to our interns Mariah Baldonado and David Atencio for their tireless effort with data entry and field work.

Photo 2. Mariah Baldonado collecting lake water quality samples at Conchas Lake.

Photo 3. David Atencio collecting water at Breen's Pond.

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APPENDIX A. Analytes included in Volatile (VOC) and Semi-volatile (SVOC) organic compound suites.

Semi-Volatile Organic Compounds	Volatile Organic Compounds
1,2,4-Trichlorobenzene	1,1,1,2-Tetrachloroethane
1,2-Dichlorobenzene	1,1,1-Trichloroethane
1,2-Dinitrobenzene	1,1,2,2-Tetrachloroethane
1,3-Dichlorobenzene	1,1,2-Trichloroethane
1,3-Dinitrobenzene	1,1-Dichloroethane
1,4-Dichlorobenzene	1,1-Dichloroethene
1,4-Dinitrobenzene	1,1-Dichloropropene
1-Methylnaphthalene	1,2,3-Trichlorobenzene
2,3,4,6-Tetrachlorophenol	1,2,3-Trichloropropane
2,3,5,6-Tetrachlorophenol	1,2,4-Trichlorobenzene
2,4,5-Trichlorophenol	1,2,4-Trimethylbenzene
2,4,6-Trichlorophenol	1,2-Dibromo-3-chloropropane (DBCP)
2,4-Dichlorophenol	1,2-Dibromoethane (EDB)
2,4-Dimethylphenol	1,2-Dichlorobenzene
2,4-Dinitrophenol	1,2-Dichloroethane
2,4-Dinitrotoluene	1,2-Dichloropropane
2,6-Dinitrotoluene	1,3,5-Trimethylbenzene
2-Chloronaphthalene	1,3-Dichlorobenzene
2-Chlorophenol	1,3-Dichloropropane
2-Methylnaphthalene	1,4-Dichlorobenzene
2-Methylphenol	1,4-Dioxane
2-Nitroaniline	2,2-Dichloropropane
2-Nitrophenol	2-Butanone (MEK)
3,3'-Dichlorobenzidine	2-Chloroethyl vinyl ether
3-Methylphenol & 4-Methylphenol	2-Chlorotoluene
3-Nitroaniline	2-Hexanone
4,4'-DDD	4-Chlorotoluene
4,4'-DDE	4-Isopropyltoluene
4,4'-DDT	4-Methyl-2-pentanone
4,6-Dinitro-2-methylphenol	Acetone
4-Bromophenyl Phenyl Ether	Acetonitrile
4-Chloro-3-methylphenol	Acrolein
4-Chloroaniline	Acrylonitrile
4-Chlorophenyl Phenyl Ether	Allyl chloride
4-Nitroaniline	Benzene
4-Nitrophenol	Bromobenzene
Acenaphthene	Bromochloromethane
Acenaphthylene	Bromodichloromethane
Alachlor	Bromoform
Aldrin	Bromomethane
alpha-BHC	Carbon disulfide
Aniline	Carbon tetrachloride
Anthracene	Chlorobenzene
Atrazine	Chloroethane
Azobenzene	Chloroform

Semi-Volatile Organic Compounds	Volatile Organic Compounds
Benzidine	Chloromethane
Benzo(a)anthracene	Chloroprene
Benzo(a)pyrene	cis-1,2-Dichloroethene
Benzo(b)fluoranthene	cis-1,3-Dichloropropene
Benzo(g,h,i)perylene	cis-1,4-Dichloro-2-butene
Benzo(k)fluoranthene	Dibromochloromethane
Benzyl alcohol	Dibromomethane
beta-BHC	Dichlorodifluoromethane
bis(2-Chloroethoxy)methane	Ethyl methacrylate
bis(2-Chloroethyl)ether	Ethylbenzene
bis(2-Chloroisopropyl)ether	Hexachlorobutadiene
bis(2-Ethylhexyl)adipate	Iodomethane
bis(2-Ethylhexyl)phthalate	Isobutyl alcohol
Butyl Benzyl Phthalate	Isopropylbenzene
Carbazole	m- & p-Xylenes
Chrysene	Methyl methacrylate
cis-Chlordane	Methylacrylonitrile
Cyanazine	Methylene chloride (Dichloromethane)
delta-BHC	Naphthalene
Dibenz(a,h)anthracene	n-Butylbenzene
Dibenzofuran	Nitrobenzene
Dieldrin	o-Xylene
Diethylphthalate	Pentachloroethane
Dimethylphthalate	Propionitrile
Di-n-butyl Phthalate	Propylbenzene
Di-n-octyl phthalate	sec-Butylbenzene
Endosulfan I	Styrene
Endosulfan II	tert-Butyl methyl ether (MTBE)
Endosulfan sulfate	tert-Butylbenzene
Endrin	Tetrachloroethene
Endrin aldehyde	Tetrahydrofuran (THF)
Endrin ketone	Toluene
Fluoranthene	Total trihalomethanes
Fluorene	Total xylenes
gamma-BHC (lindane)	trans-1,2-Dichloroethene
Heptachlor	trans-1,3-Dichloropropene
Heptachlor epoxide	trans-1,4-Dichloro-2-butene
Hexachlorobenzene	Trichloroethene
Hexachlorobutadiene	Trichlorofluoromethane
Hexachlorocyclopentadiene	Vinyl acetate
Hexachloroethane	Vinyl chloride
Indeno(1,2,3-cd)pyrene	
Isophorone	
Methoxychlor	
Metolachlor	
Metribuzin	
Naphthalene	

Semi-Volatile Organic Compounds	Volatile Organic Compounds
Nitrobenzene	
N-nitrosodimethylamine	
N-nitroso-di-n-propylamine	
N-nitrosodiphenylamine	
Pentachlorophenol	
Phenanthrene	
Phenol	
Prometryne	
Pyrene	
Pyridine	
Simazine	
trans-Chlordane	